Geographic Coordinate Data Base

Geographic Measurement Management For Windows®

WinGMM

Version 1.00 - 10262001

WinGMM Software User Guide

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WinGMM Software User Guide

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PURPOSE AND SCOPE

This, *WinGMM Software User Guide* describes the various programs available in WinGMM for building the GCDB.

The following Program Reference details what happens when the user interacts with each WinGMM program. Brief comments are added as to why certain actions must take place and why some actions are preferable to others. The <u>WinGMM Technical Reference Manual</u> contains more detailed descriptions of what could be called strategy and style. This Program Reference is intended primarily to be more of a rulebook, but with a few well-placed suggestions.

This *WinGMM Software User Guide* assumes that you have a working knowledge of your computer's Windows® operating system and some familiarity of an available text editor.

This document references WinGMM use under Windows® 95/ 98, Windows 2000, or NT operating systems. Please do not hesitate to contact the GCDB office in your region or state, if you have any questions or problems concerning this document.

HOW TO READ THE WinGMM PROGRAM REFERENCE

In this program reference, every program has its own chapter. The chapter flows from the first menu choice and its submenus to the last menu choice of the program.

Users who are not familiar with software documentation are advised to review the following description of how type styles and page layout are used to discriminate between different kinds of printed information.

The boxed in blue italic text is meant more to be a quick reference tool and to be a place for short but important bits of information that might get lost in the discussion.

An example from part of a page may look like:

The prompt cycle: *<From what ID point>* *Distance* *Quadrant Bearing* *To what ID point*	**INRAWW (2) - RETURN TO INPUT OF CARDINAL LINES** The very first prompt for input is: Current Active SID is: NONE NEXT STATIONS LAST THREE DIGITS WILL BE 120 ENTER TO ACCEPT OR INPUT ACTUAL THREE DIGIT ID FROM STATION IS 100100 INPUT AN F (FROM) TO CHANGE IT (OR Q TO QUIT) INPUT THE DISTANCE INCREMENT FROM 100100 IN CHAINS <40> **20.13**

Below is the same format, but with descriptions of the type styles.

BOXES CONTAIN: *Helpful legends,* *Quick reference to various codes,* *Drawings and comments about the processes to the right,* *Situations where the user would need the particular menu choice,* *Examples of how some common problems are solved, w/sketches,* *Room for users to write helpful data.*

(5) MENU CHOICE IN PARENTHESIS

Indented normal text is comment and discussion leading through the process. If user should strike the S key, this document will portray it as [S], lowercase is OK. If the user should strike the Enter or Return key, it is portrayed as [CR]. The square [ ] brackets signify a key(s) to strike on the keyboard.

THIS STYLE OF TEXT SIGNIFIES WHAT THE COMPUTER DISPLAYS ON ITS SCREEN.
WinGMM WILL DESCRIBE WHAT KIND OF VALUE IT WANTS THE USER TO KEY IN,
THEN PROVIDES A DEFAULT VALUE IN < > BRACKETS, LIKE:
<40   >
[CR]
> Pressing **[CR]** is identical to keying the default value, then **[CR]**.
> Above example: **40 [CR]**

20.13 This bold type style represents what the user might have keyed in. The **[CR]** is understood to have been used to Enter the data.

NOTE: Some text uses an even smaller font in order to fit the format of these documents.

THE LOOK AND FEEL OF WinGMM
Geographic Measurement Management for Windows® (WinGMM) is a 32-bit application for Microsoft Windows®. WinGMM is in use by many federal, state, and local governments as well as private sector Surveying and Spatial Information organizations.

The WinGMM user-interface was designed to reduce the amount of work that the user has to perform as well as providing the user with maximum control over the process. Work is cut down by reducing the number of keystrokes by using a Windows® toolbar and pulldown menus. The user has maximum control over the process. The user can always override the expected path through the process when complex situations arise. All reports are understandable and thorough.
Of interest to the beginning user are the defaults. Some defaults govern how the program operates and other defaults are values that WinGMM expects to be the next logical data entry, always enclosed in < > brackets. Understanding how WinGMM will react, and to some degree controlling how WinGMM will react, are keys to becoming efficient in the use of the software.

For instance, WinGMM has only one program for entering plat data: INRAWW. By choosing the correct INRAWW menu choice, the user can have the program prompt in different fashions to match the kind of data being entered or to match the temperament of the user. Functions that users need during data entry are accessible in INRAWW's menu or by answering prompts in such a way as to direct the program to fulfill a user's request.

Any of the WinGMM .EXE applications can be run from the DOS prompt found under File/Shell to DOS. This can provide better error detection and troubleshooting software results because the .exe application scrolls and is visible.

FLOWCHART OF WinGMM PROGRAMS

Programs in *italics* are needed to create all required files:
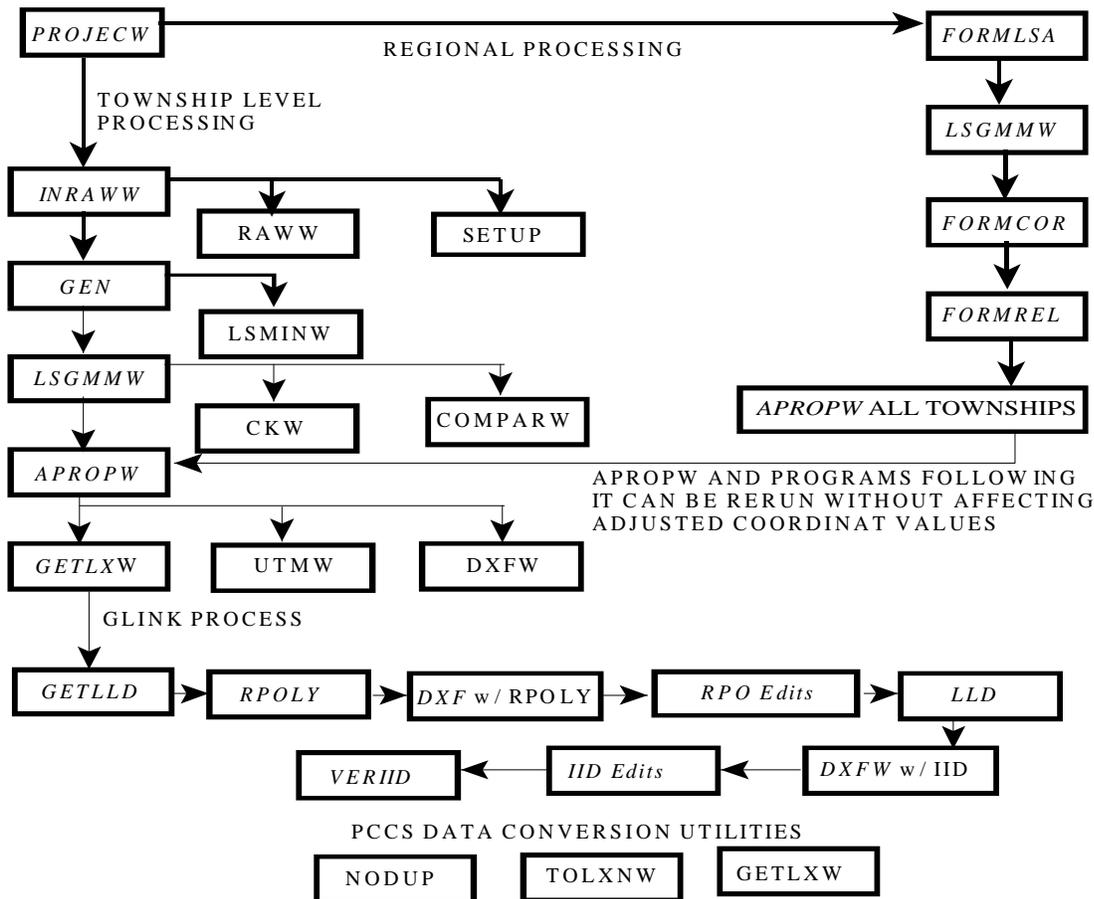
FILES CREATED OR UPDATED BY WinGMM PROGRAMS

Program	File ext	Description:
PROJECW	temp.job	File containing name of the current project
PROJECW	.DEF	File containing all defaults for the project
INRAWW	.SID	File containing error estimates of surveys, and source documents code
INRAWW	.RAW	File of plat data; from-to point, brgs, dists, SIDs source ID
INRAWW	.LSA	List of all control/dist/brg values
INRAWW	.SD	List of all control/dist/brg error estimates
INRAWW	.CON	List of control pts w/ lat/long & error estimates.
RAWW	.RLS	Raw closure data and some data inconsistencies reported
GEN	.GEN	Report of compass rule adjustment, closures
GEN	.LSA	Appends approximated coordinates (not control)
LSMINW	.MIN	Report of Least Squares Adjustment (LSA), 1 control point.
WinGMM	.ADJ	Report of Least Squares Adjustment, 1 or all control.

LSGMMW	.COR	List of LSA-adjusted coordinates, State Plane
LSGMMW	.GEO	List of LSA-adjusted coordinates, Lat / Long
LSGMMW	.PGC	List of LSA-adjusted coordinates
LSGMMW	.LSA	Approx. coordinates replaced by LSGMMW-adjusted coordinates
CKW	.CHK	Report of closed figure misclosures, includes closing ratio
APROPW	.SUB	Report on procedures used to subdivide a township.
APROPW	.IRR	What & how corners control subdivision.
APROPW	.ADD	Customized coordinate geometry (Cogo) processes in subdivision.
APROPW	.LXN	Abbreviated lines file, converts to/from LX file.
APROPW	.COR	Coordinates, State Plane Coordinates
APROPW	.GEO	Coordinates, Lat / Long geographic coordinates
APROPW	.PGC	Coordinates
APROPW	.NOT	Points & lines removed from in lines file.
APROPW	.INT	List of polygons
COMPARW	user-named	Report compares coordinates of two .COR or two .PGC files.
DXFW	.DXF	AutoCAD drawing with raw, adjusted, or LXN data
FORMLSA	.COR	Coordinates of multi-Township merge, State Plane
FORMLSA	.GE0	Coordinates of multi-Township merge, Lat / Long geographic coordinates
FORMLSA	.PGC	Coordinates of multi-Township merge
FORMCOR	.COR	Coordinates, SPC, sorted back into Township files.
FORMCOR	.GEO	Coordinates, Lat/Long, sorted into Township files.
FORMCOR	.PGC	Coordinates, sorted back into Township files.
TOLXNW	.LXN	Line file, in points only
GETLXW	.LX	Line file, points, line type, line number, pencodes, UTMs
NODUP	.RA2	Original .RAW file, backed up
NODUP	.RAW	New .RAW file, without duplicate Point IDS
NODUP	.DUP	Report on NODUP's activities
CHZONEW	.DEF	Stores zone code change in .DEF file
CHGIDS	.CFG	Extensions of files to use are stored in CHGIDS.CFG

In the WinGMM convention, the filename refers to the township and the file extension refers to the type of data in the file. A reference to a ".CON file" is a reference to the file that contains control information for the current township being worked on. The full file name would be something like T08NR11W.CON, indicating control held in township eight north, range eleven west.

WinGMM BASIS SCREEN AND FUNCTION OF BUTTONS

This section will describe the functions performed by the Pulldown Menu and the Toolbar Buttons on the WinGMM main window. Pulldown menu items and Buttons that activate applications are described elsewhere in this manual.
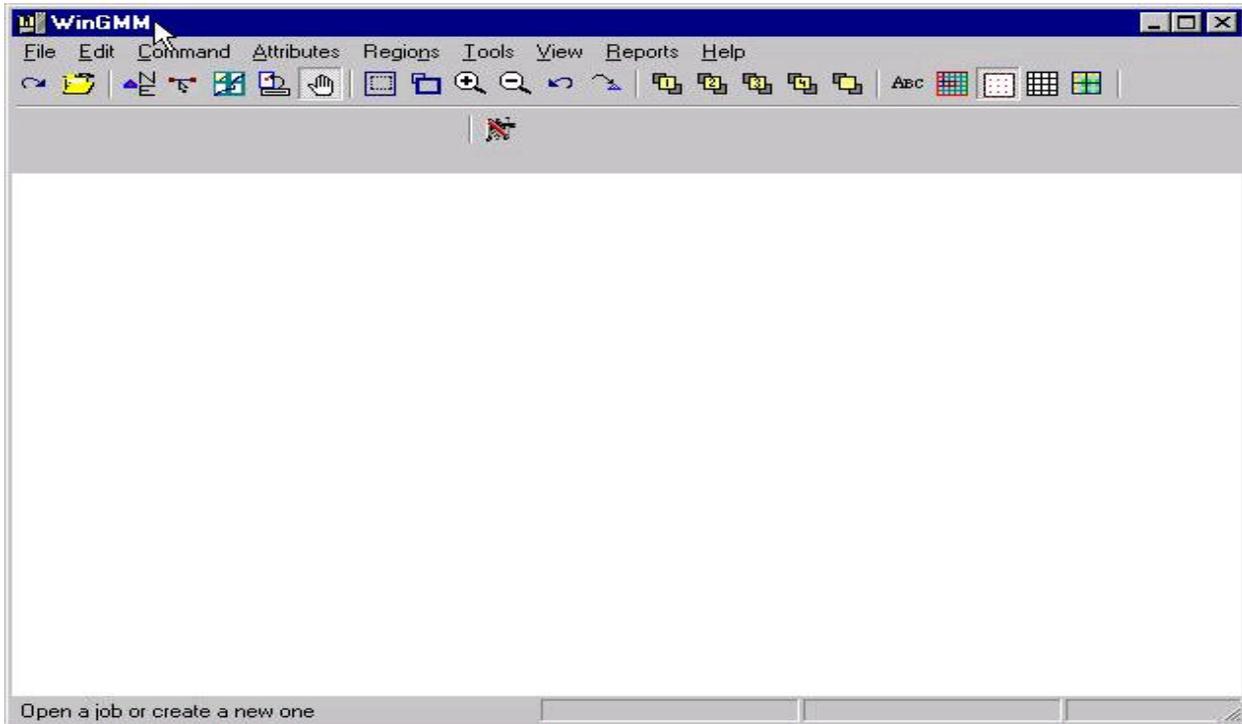
TOOLBAR BUTTONS
The Toolbar buttons offer a single keystroke ability to quickly activate some of the functions found in the main menu pulldowns. A quick explanation of the buttons follows starting from the left most tool bar button follows.
1. Reload Current Project
2. Open Project
3. Selection Tool (a list points box opens)
4. Select Line (a selected lines box opens)
5. Select RAW polygons
6. Select Parcels (a selected parcel Ids box opens. Same as from the pull down menu "Attributes/Selected Ids")
7. Pan/zoom Tool (repositions the displayed plot. Same function as pulldown menu "Tools/Pan")
8. Zoom Window (Select this tool and selecting a portion of the plot will zoom that area. Same as pulldown menu "Tools/Zoom window")
9. Zoom Extents (Restores the plot to original size. Same as pulldown menu "Tools/Zoom Extents")
10. Zoom In (Zooms the window in. Same as pulldown menu "Tools/Zoom In")
11. Zoom Out (Zooms the window out. Same as Pulldown menu "Tools/Zoom Out")
12. Zoom Previous (Restores a Zoom window to original size. Same as pulldown menu "Tools/Zoom Previous")
13. Go To Point (Box appears to enter a specific point Id on the plot and then zooms to that point. Same as pulldown menu "Tool/Go to Point")
14. Save/Restore View
15. View Point Identifiers (Selection will cause plot to turn On and Off all point identifiers. Same as pulldown menu "View/Point Names")
16. View RAW Lines (Displays plot RAW lines. Same as pulldown menu "View/Lines RAW")

WinGMM Screens

17. View LSA Lines (Displays plot LSA lines. Same as pulldown menu "View/Lines LSA")
18. View LXN Lines (Displays plot LXN lines. Same as pulldown menu "View/LXN")
19. View Parcels (Same as pulldown menu "View/Parcel Label Points/Parcel Area Points")
20. Ten unused tool bar buttons (See "View/Configuration Options " to customize these buttons.
21. Run a Project .bat program (any batch (.bat)) file that the user has programmed can be executed from this button)

PULLDOWN MENU SELECTIONS

FILE	EDIT	COMMAND	ATTRIBUTES

New Job Wizard
Open
Reload Current   F3
Save
Close

Zip Maintenance   ▶

Import   ▶
Export   ▶
Print Setup
Print

Properties (PROJECW)
Rebuild LSA_SD (SORTLSAW)

Shell to DOS

Exit

Least Squares Analysis (LSGMMW)

Irregular Section Subdivision
Post-adjustment calculations
Auto Proportioning_Subdivision (APROPW)
Coordinate Geometry (CSTUF)

Utilities   ▶

Data Quality Tools   ▶

Change State Plane Zone (CHZONEW)
Datum Transformation NAD27<>NAD83 (GCONW)
Datum Transformation NAD83<>HPGN (GCONHPW)

Input / Edit Record data (INRAWW)
Input / Edit Subdivision data (APROPW)
Change Point Identifiers (CHGIDS)

Import LLD file (GETLLD)
Convert PCCS .an to .iid (AN2IID)
Convert .AN to .GLD format (AN2GLD)

Compute Raw Polygons (RPOLY)
Link Parcels with Descriptions (LLD)

Compute Raw polygon Centroids
Check Polygons (VERIID)
Create DXF for glinking

Parcel Locator
Selection Parcel Ids
Move parcel label point
Banding   ▶

REGIONS	TOOLS	VIEW	REPORTS

Build / Edit Regions

Join Township Files (FORMLSA)
Compute Indiv. Twp Reliabilities (FORMREL)
QC Region Match (QCMAT)
Parse Individual Townships (FORMCOR)

Goto Point   Ctrl+G

Refresh Screen

Zoom In   F5
Zoom Out   Shift+F5
Zoom Extents   Ctrl+Z
Zoom Window   Ctrl+W
Zoom Previous

Pan Up   F6
Pan Down   Shift+F6
Pan Left   F7
Pan Right   Shift+F7

✔ Lines (LSA)   Ctrl+L
  Lines (RAW)   Ctrl+R
  Lines (LXN)   Ctrl+X

✔ Points   Ctrl+P
  Point Names   Ctrl+I
✔ Control Stations Ctrl+C

  Raw Polygon Centroids
  Parcel Label Points   ▶

  Surveys

✔ Toolbar
  Tool Box

  Configuration Options

Project Reports

Section Closure Report (GEN)
Least Squares Analysis Report (ADJ)
Proportioning_Subdivision Report (SUB)
Test command

FILE

NEW JOB WIZARD

To run **NEW JOB WIZARD**: From the WinGMM main window menu, select "File/New Job Wizard"
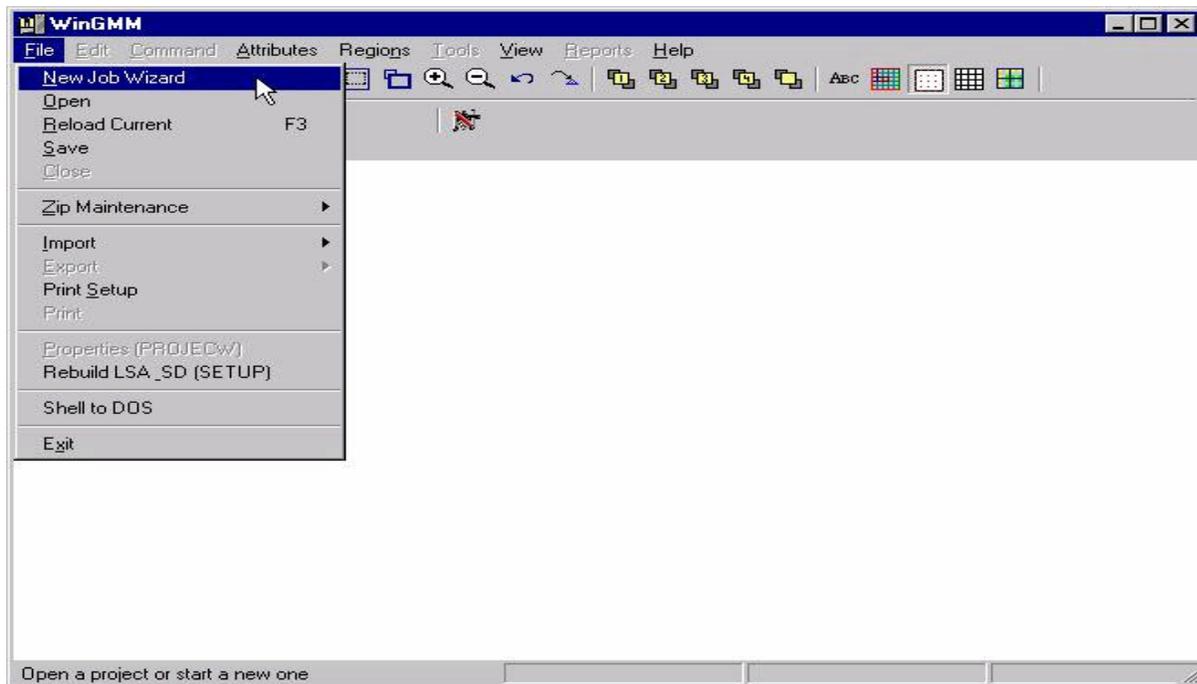
Clicking on the entry brings up the following information window.
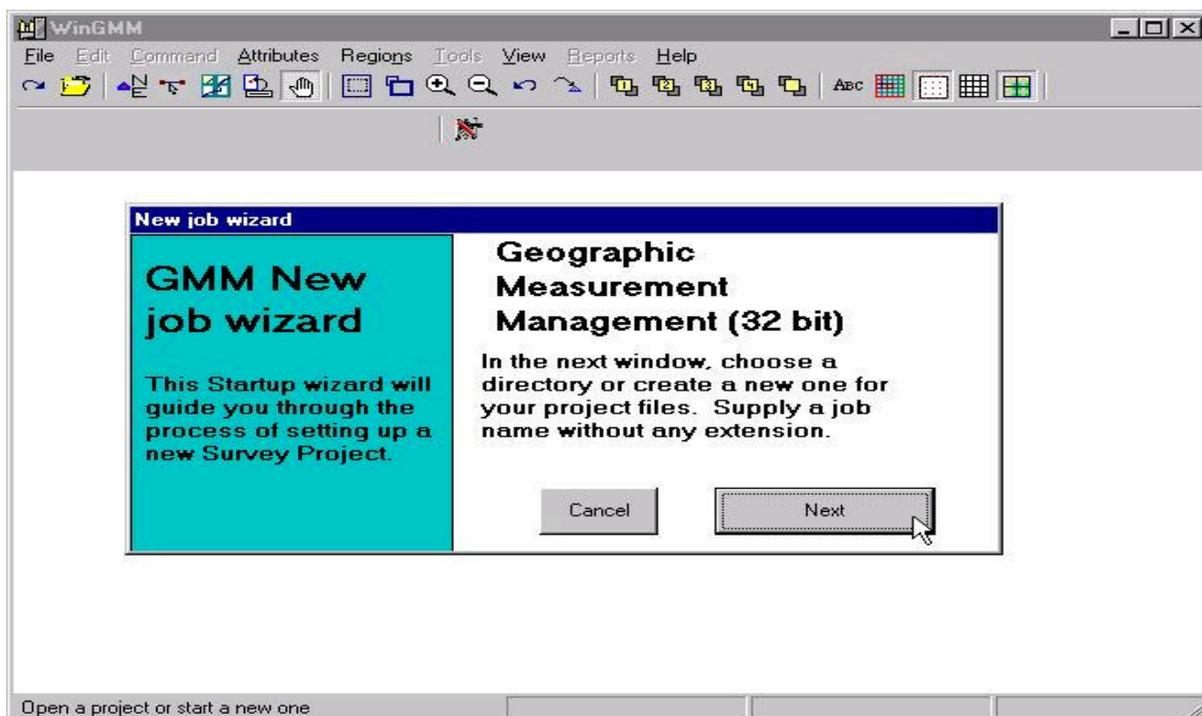
Click Next.
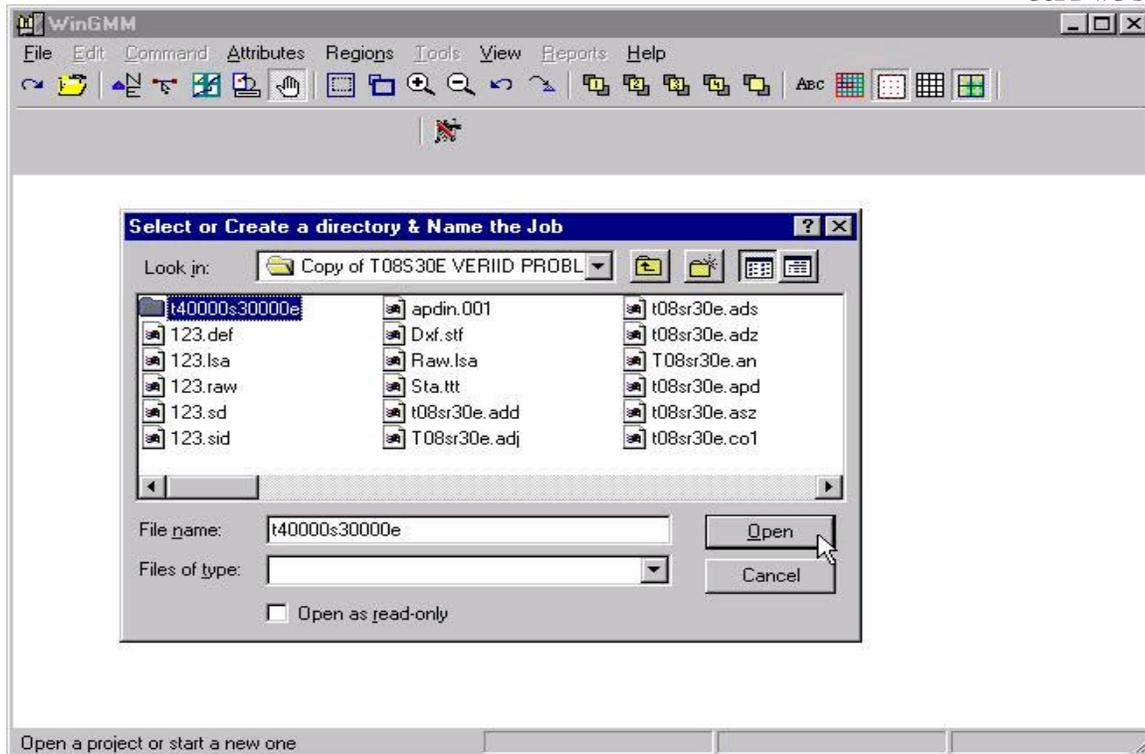
NOTE: It is highly recommended that you do not use the WinGMM File Dir to store your WinGMM Data Project files.

Create a new Directory and File name.
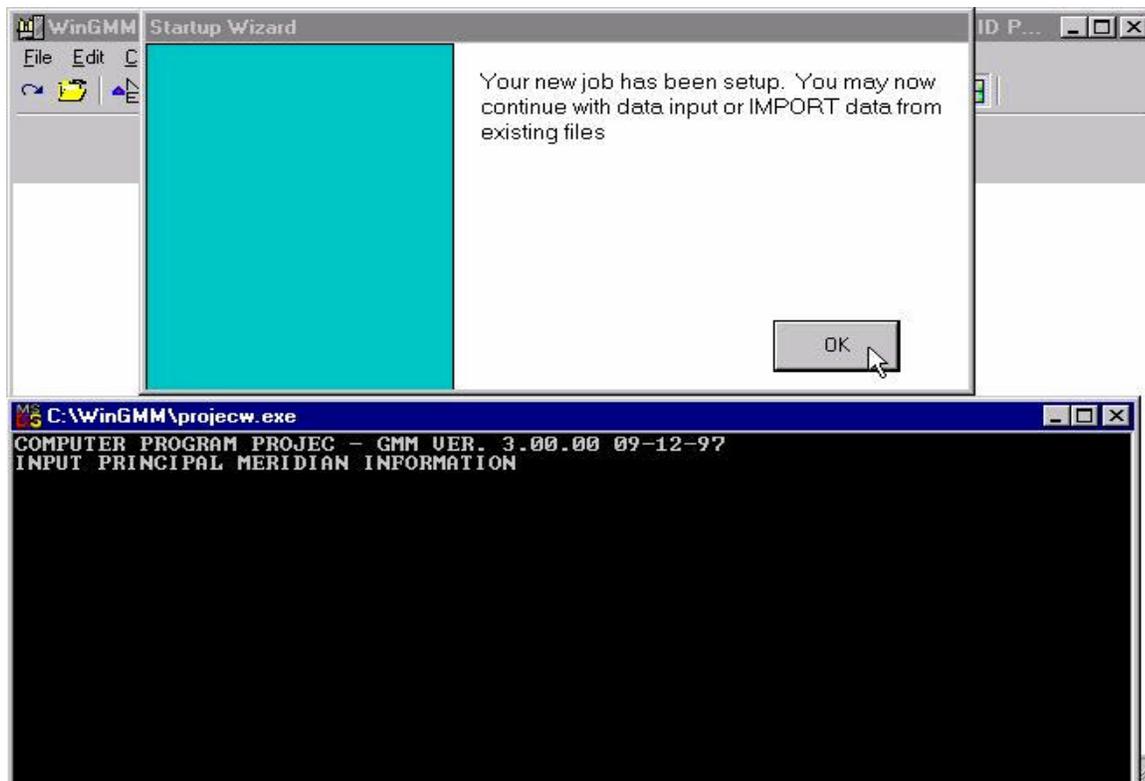
Click OK and enter the first five lines of information intrinsic to the project as prompted by the PROJECW program.

WinGMM Screens

```
WinGMM D:\ANDY'S WORK\LR2000\GCDB\...OTS\NEW FOLDER\COPY OF T08S30E VERIID P...    _ □ X
File  Edit  Command  Attributes  Regions  Tools  View  Reports  Help

C:\WinGMM\projecw.exe                                                    _ □ X
PROJECT IS              T40000S30000E
<1> T40000S30000E                              <TOWNSHIP AND RANGE>
<2> 10                                         <PRINCIPAL MERIDIAN>
<3>                                            <STATE OR LOCAL DESIGNATION>
<4>   61 COLORADO CENTRAL LAMBERT              <STATE PLANE ZONE>
<5> PROJECT ELEVATION IS        10600.00 FT.


DEFAULT STANDARD ERROR ESTIMATES
<6> DISTANCES        .1 FT.  PLUS  1000. PPM <1/  1000. OR      5.4 FT./ MILE>
<7> ANGLES    0- 0- 4.0 <D-M-S>
<8> BEARINGS   0- 2-  .0 <D-M-S>
<9> CONTROL NORTHING <Y>              .001 FT.
<10> CONTROL EASTING <X>              .001 FT.
<11> PRINT OUT ALL RESIDUALS
<12> ELEVATIONS READ FROM .LEV FILE ?         - - NO
<13> ERROR ESTIMATES READ FROM .SD FILE ?     - - YES
<14> ERROR ELLIPSES COMPUTED ?                - - YES
<15> READJUST WITH ROBUSTED ERROR ESTIMATES ? - - NO
<16> UTM ZONE = # 12
<17> DATUM IS NAD 27
<18> LINEAR UNITS ARE U.S. SURVEY FEET
INPUT THE # OF THE ITEM TO CHANGE
ENTER IF NO CHANGE IS DESIRED <QUIT>

Open a project or start a new one
```

When finished, this is an example of parameters established for a project in Colorado. Selecting ENTER will enable the beginning of data entry.

ZIP MAINTENANCE

To run **ZIP MAINTENANCE**: From the WinGMM main window menu, select "File/Zip Maintenance/Extract files from a ZIP archive"
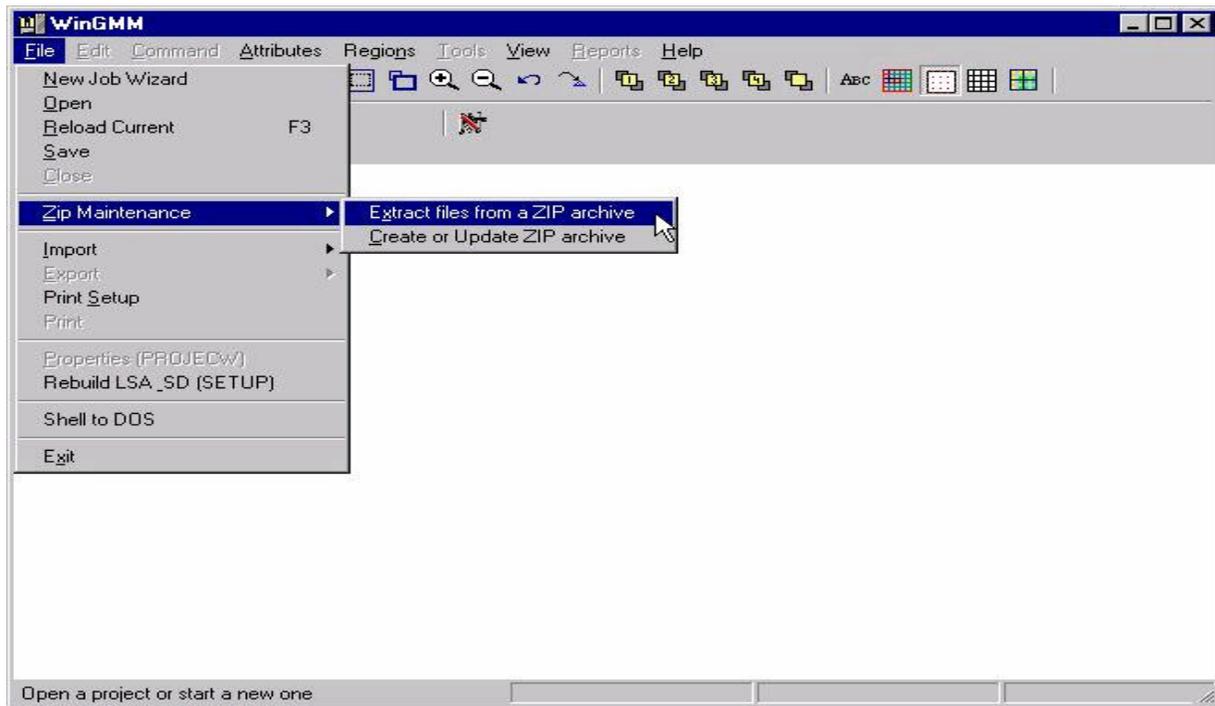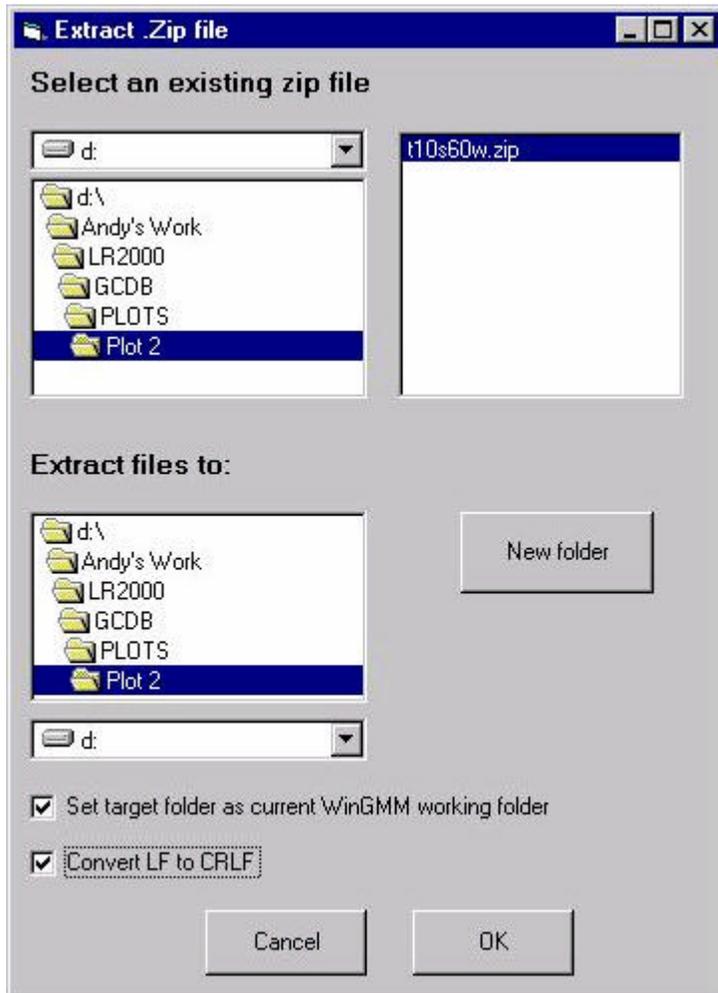
Purpose: Allows the user to extract archive files with .zip extensions and copy to any location as desired.
On the "Extract from .zip" screen there are 2 drive selection boxes. Most users, Most of the time – are going to be extracting to the same drive/directory -- for this reason, as you navigate the top directory tree, it auto-updates the bottom one also. IF THAT IS NOT WHERE YOU WANT IT, just navigate the bottom directory tree to select the location to extract to. IF THE DESTINATION IS ON A DIFFERENT DRIVE, use the drive selection box that appears right below the destination directory.

IMPORT APD

To run IMPORT APD: From the WinGMM main window menu, select "File/Import/Amended Protracted Diagram"
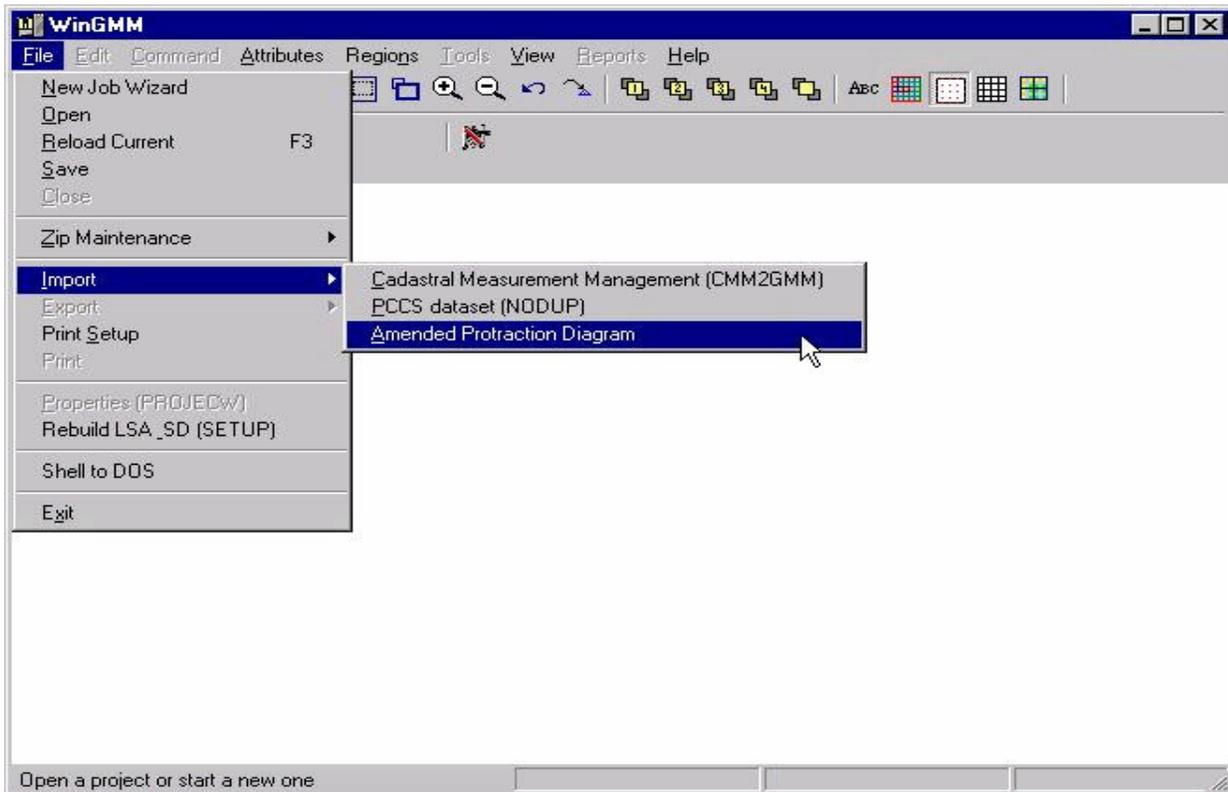
PURPOSE: Used to import existing APD data when creating new adjacent townships. It can also be use for attributing.
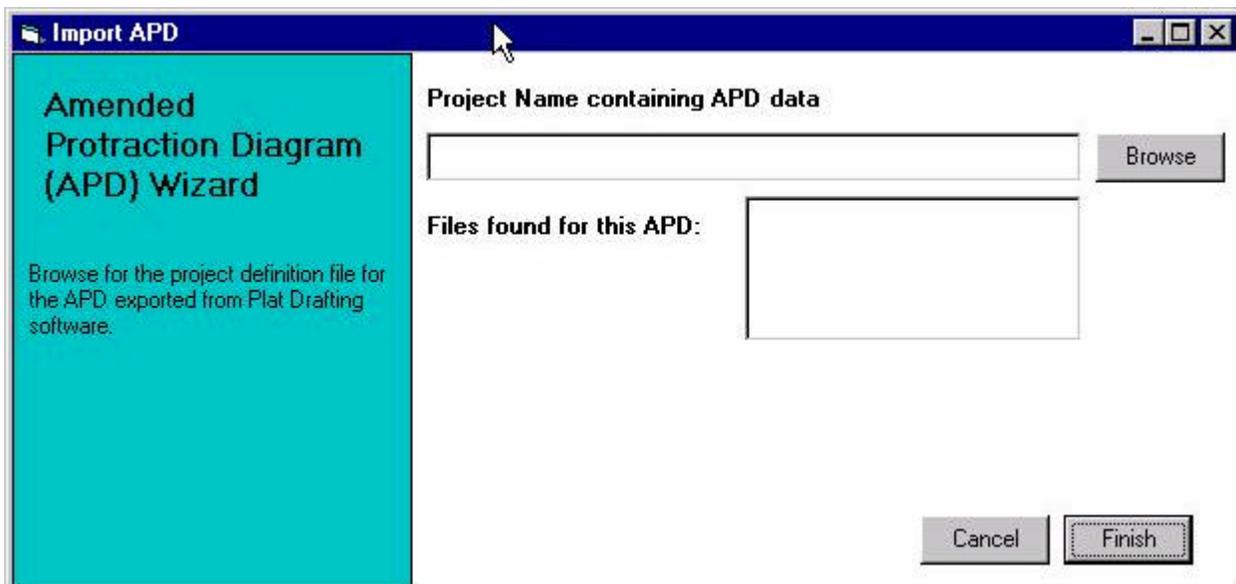
Enter Township.def name. The necessary files that should be found are .con, .raw, .lot and .sid. If all files are present the Finish button will highlight and when clicked the graphic township will be displayed as normal.

1. The exported project.raw file is backed up to Project.ra2

2. A new raw file is created, which has certain lines removed -- these lines have a sid value of "999999RPB" - these lines are stored in an .apd file.

3. Using the contents of the .apd file - a first attempt at building an .add file is performed. Pointids which have a leading zero have their leading zero replaced with a "9". This is also where a .irr file is created and the 1/4 corners are set to non-computable.

4. All control in the .con file gets imported and the job is displayed.

5. Proceed to importing the common boundaries using INRAWW.

6. Once the data set is complete, a run of LSGMMW pulls the whole project together (notice that all control is held fixed, and lines have been weighted to accommodate the rules of apds -- this can lead to deceptive results in the adjustment (.adj) reporting file.

7. The program APROPW is executed next -- refine the .add/.irr calculations as necessary. Apropw should recognize the existing .add file.

8. Upon completion of subdivision of sections (and non-subdivision of protraction blocks (pbs) completed parcels will be ready for linking.

9. Next run the LLD program to assign attributes to parcels based on the contents of the .lot file. The match-up is the same as for all townships at this point. Lot numbers, pb labels, special surveys, and aliquot parts are identified for all polygons in the project. Results are fully described in the .iid file.

10. Using ordinary selection & editing tools, assign double attributes as necessary, edit/fix attributes assigned in error, and the final inspection of your results.

11. When satisfied with results, running the Veriid program completes the job & creates the final township .an file.

COMMAND

IRREGULAR SECTION SUBDIVISION

To run IRREGULAR SECTION SUBDIVISION: From the WinGMM main window menu, select
"Command/Irregular Section Subdivision"
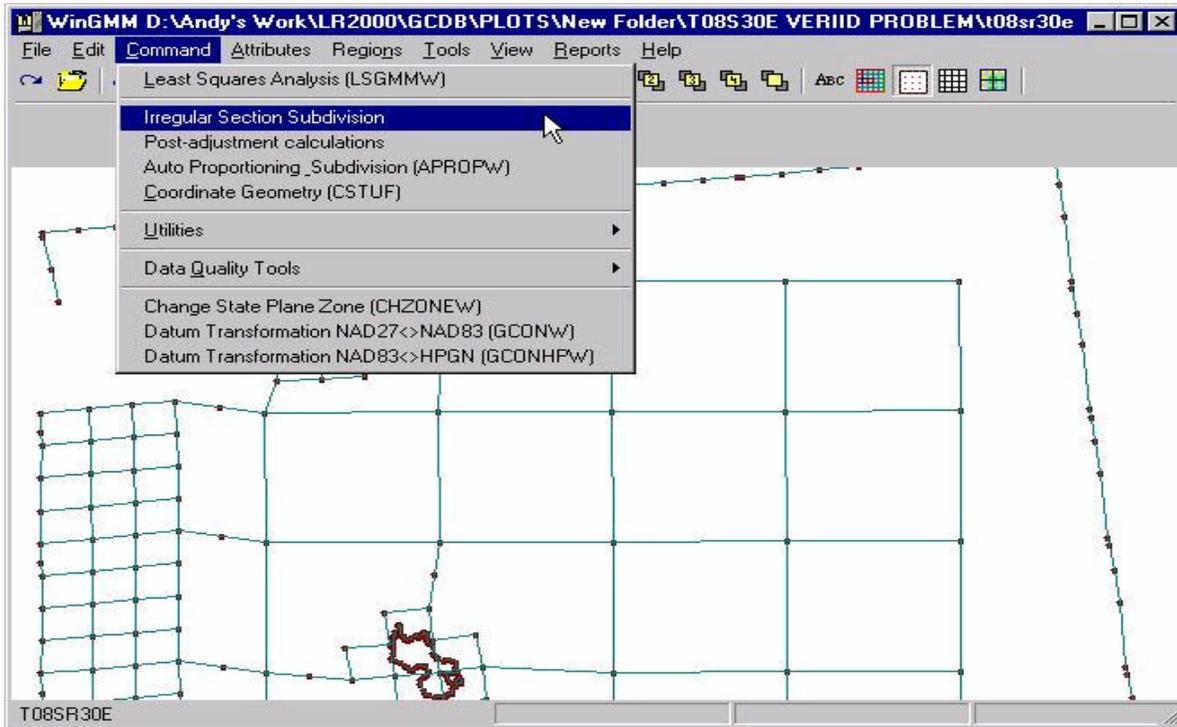
PURPOSE: The intention of this interface is for both defining and reviewing results of irregular section
subdivisions. The township diagram can quickly show which sections are defined as irregular, and allow
graphical command of subdivision for each color coded graphical extension map.

Township diagram

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

🟩 Defined
🟨 Status

Define   Status   Compute   Close

Section 1

600700	620700	640700	660700	700700
600660	620660	640660	660660	700660
600640	620640	640640	660640	700640
600620	620620	640620	660620	700620
600600	620600	640600	660600	700600

Short Section   AutoIRR   No Subdivision   Minor sub
3 Mile   Elongated   Reset   Cancel
Save Section

Section 1

```
IRREGULAR SECTION SUBDIVISION FOR SECTION  1 (SECTION CENTER 640640)
NO CORNER ID SUBSTITUTIONS
NO DOUBLE SECTION CORNERS IDENTIFIED
NON-COMPUTABLE QUARTER CORNERS
     640600
     640700
     600640
     700640


FOR CENTER OF SECTION
N-S LINE IS

NON-EXISTENT

E-W LINE IS

NON-EXISTENT
```

A generic township is displayed (upper left display).

Selecting the "Define" button and a selected section will display that section in detail (upper right map).

Selecting the "Status" button will tell the user which corners you specified not to compute, which corners to use to control the subdivision, and where to calculate proportioned corners (bottom left display).
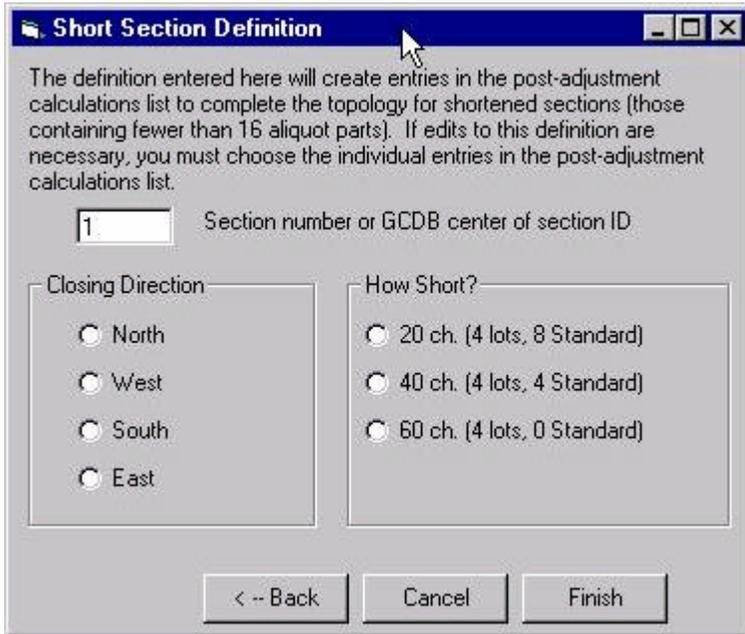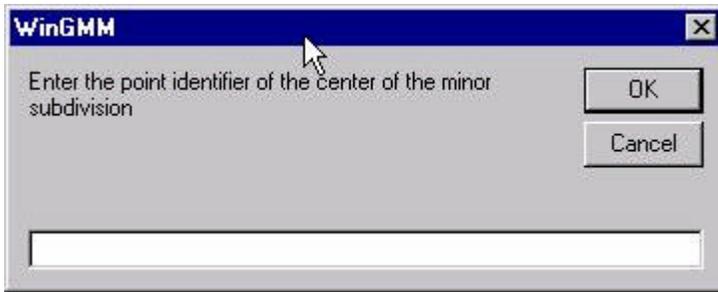
Short Section Definition

The definition entered here will create entries in the post-adjustment calculations list to complete the topology for shortened sections (those containing fewer than 16 aliquot parts). If edits to this definition are necessary, you must choose the individual entries in the post-adjustment calculations list.

`1.`   Section number or GCDB center of section ID

Closing Direction
- ○ North
- ○ West
- ○ South
- ○ East

How Short?
- ○ 20 ch. (4 lots, 8 Standard)
- ○ 40 ch. (4 lots, 4 Standard)
- ○ 60 ch. (4 lots, 0 Standard)

[< -- Back]   [Cancel]   [Finish]

Minor Subdivision

WinGMM

Enter the point identifier of the center of the minor subdivision

[OK]
[Cancel]

WinGMM

Minor subdivision identified by 660620 has been stored in post-adjustment calculations.

[OK]

Elongated Button

 After entries are made, Select the Finish button. This brings up the Post-Adjustment Calculations screen that is explained in the next section.

The Reset button clears the Define display.

The Cancel button clears the all the displays for the selected township.

The Save Section button saves the changes.

POST-ADJUSTMENT CALCULATIONS

To run POST-ADJUSTMENT CALCULATIONS: From the WinGMM main window menu, select
"Command/Post-Adjustment Calculations "

Brings up this screen.

You may now also work with point/line removal .NOT functions by selecting the appropriate tab. NEW .not definitions, DELETE .not definitions, and EDIT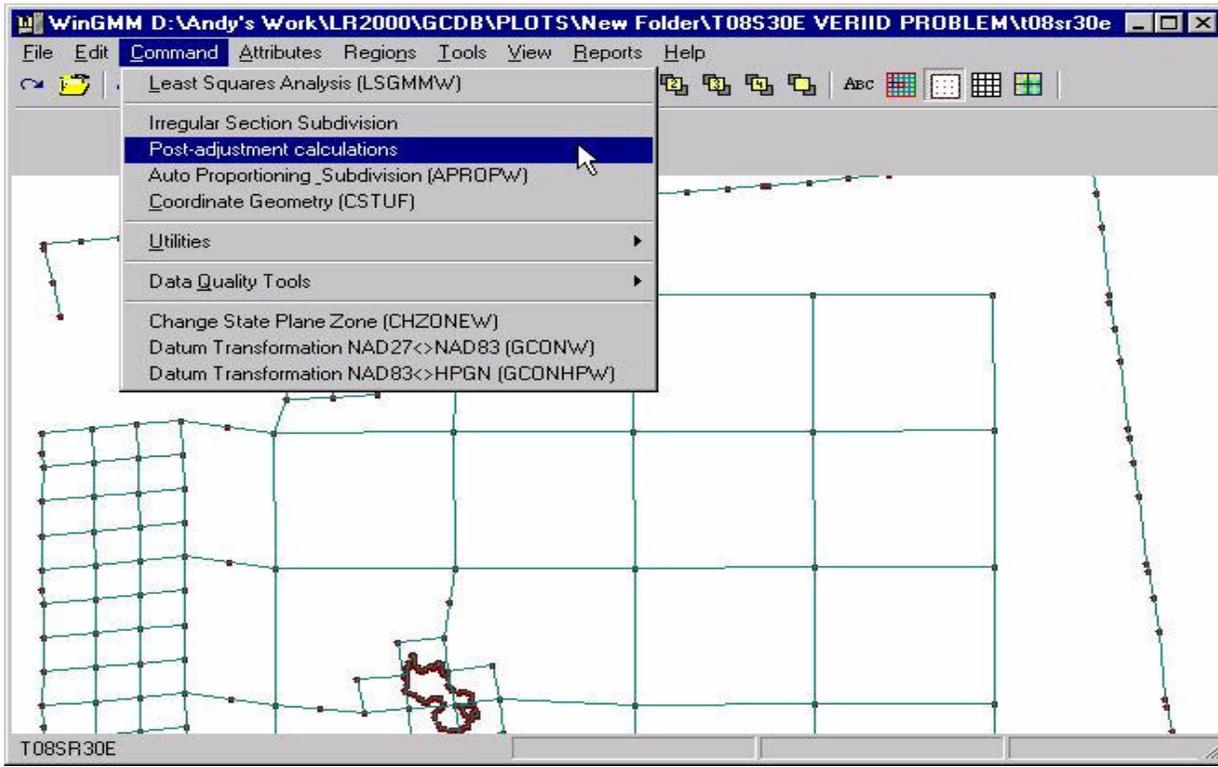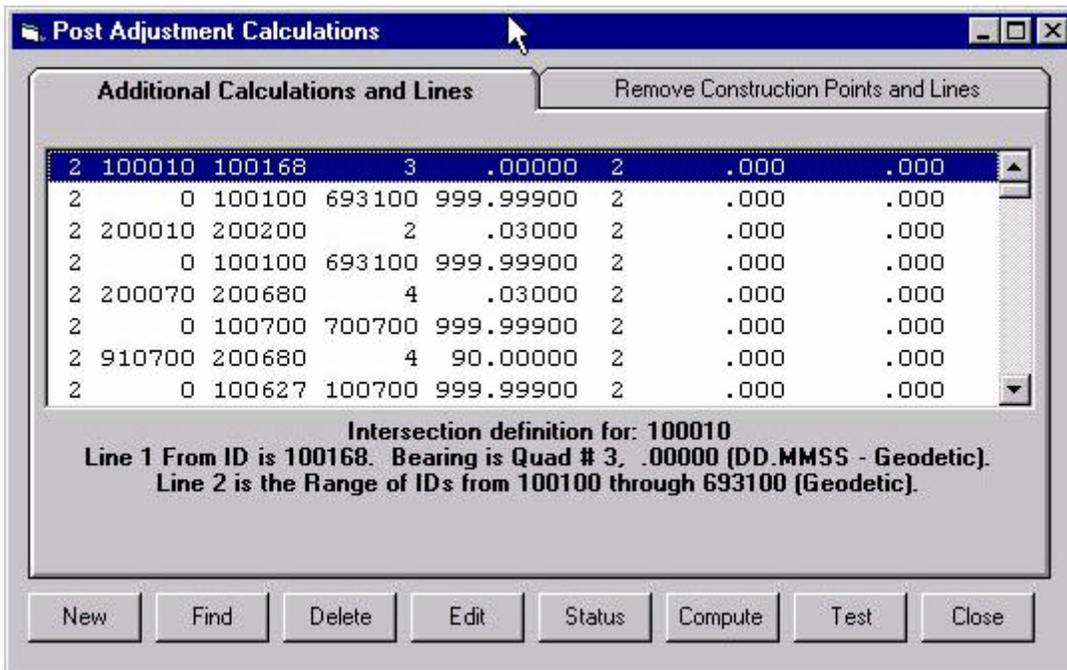 .not definitions all can be used. (Includes PointID selector if those points selected currently have coordinates assigned).

1) Click once on the item in the list, the graphic highlights the point (if it's been computed). An informative message is displayed describing that item DEFINITION.

2) If you double-click the item, additional graphics are provided (for example, if an intersection by pointids is xxxxxx, you would see two intersecting highlighted lines, etc.) In some situations, this additional graphic is not available.

   * The backup files (.adZ, .noZ, .asZ) are now updated reflecting your last edit or change.

3) Clicking the NEW button allows addition of Traverse or Proportion, Intersections, Connecting lines function. Each leads the user to a new screen where the data is entered.

4) The Find button is a quick way to find a point in the ADD file.

5) The DELETE button will delete a selected calculation that is no longer needed or necessary.

6) Click the STATUS button. The displayed message changes to the ACTUAL STATUS about how the point was calculated (from .sub file report).

7) The "COMPUTE" button does a full run of the APROPW program, including calculations of intersections and polygons. Both buttons perform an automatic update of graphics and list box items

8) The button labeled "TEST" performs a run of APROPW, without any intersections or polygon updates.
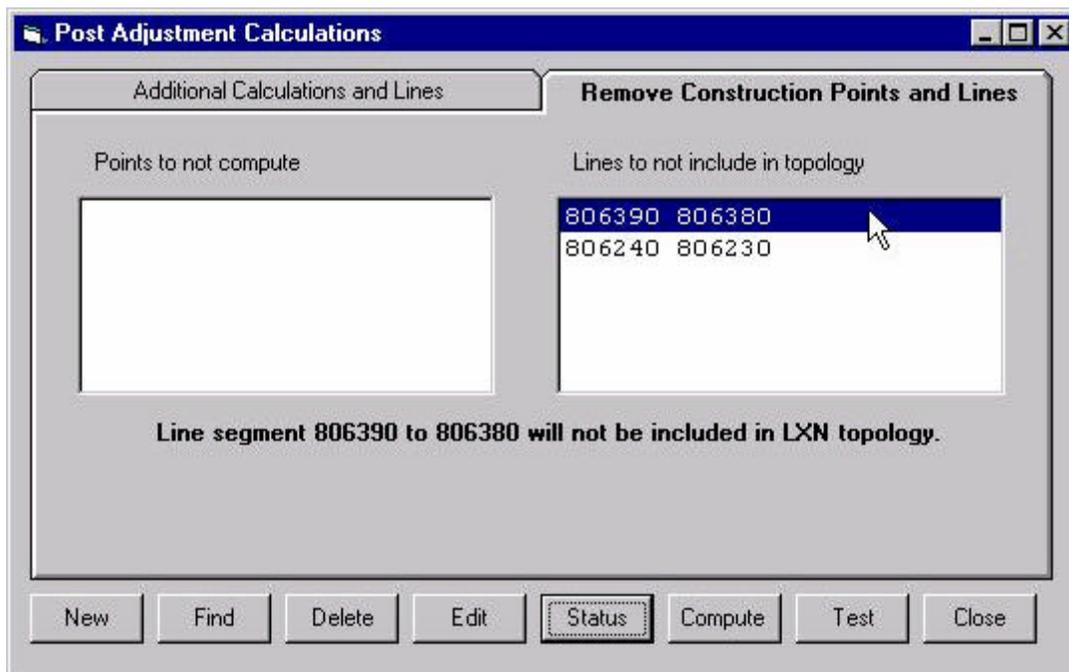
This screen allows you to remove construction points and lines (usually field control tie) lines or lines not needed to construct polygons).

ATTRIBUTES

PARCEL LOCATOR

To run PARCEL LOCATOR: From the WinGMM main window menu, select "Attributes/Parcel Locator"
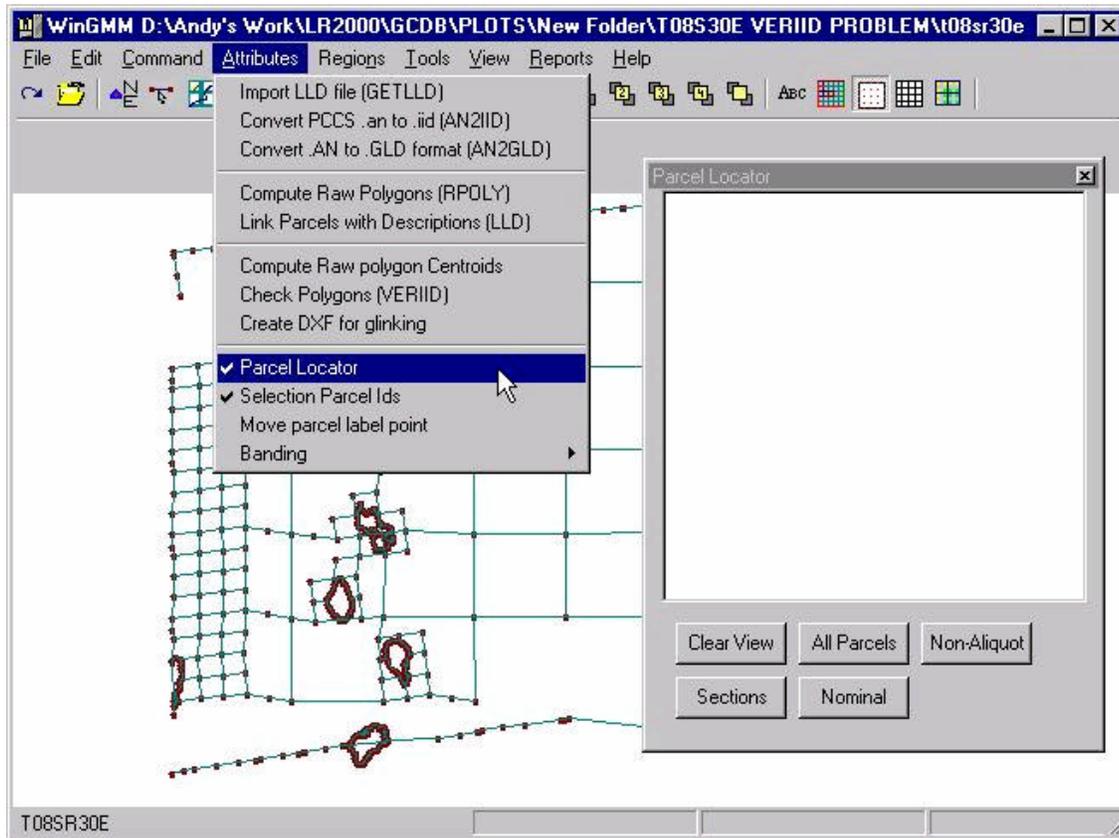
This function allows the user to view either All Parcels, Non-Aliquot parcels, Section parcels, and Nominal location characteristics of the displayed plot.

SELECTION PARCEL IDs

To run SELECTION PARCEL IDs: From the WinGMM main window menu, select "Attributes/Selection Parcel IDs"

Selection Parcel Id's is the initial step for editing attributes created by program" LLD".

Note – You must run the APROPW, GETLLD, and LLD programs prior to running this function.
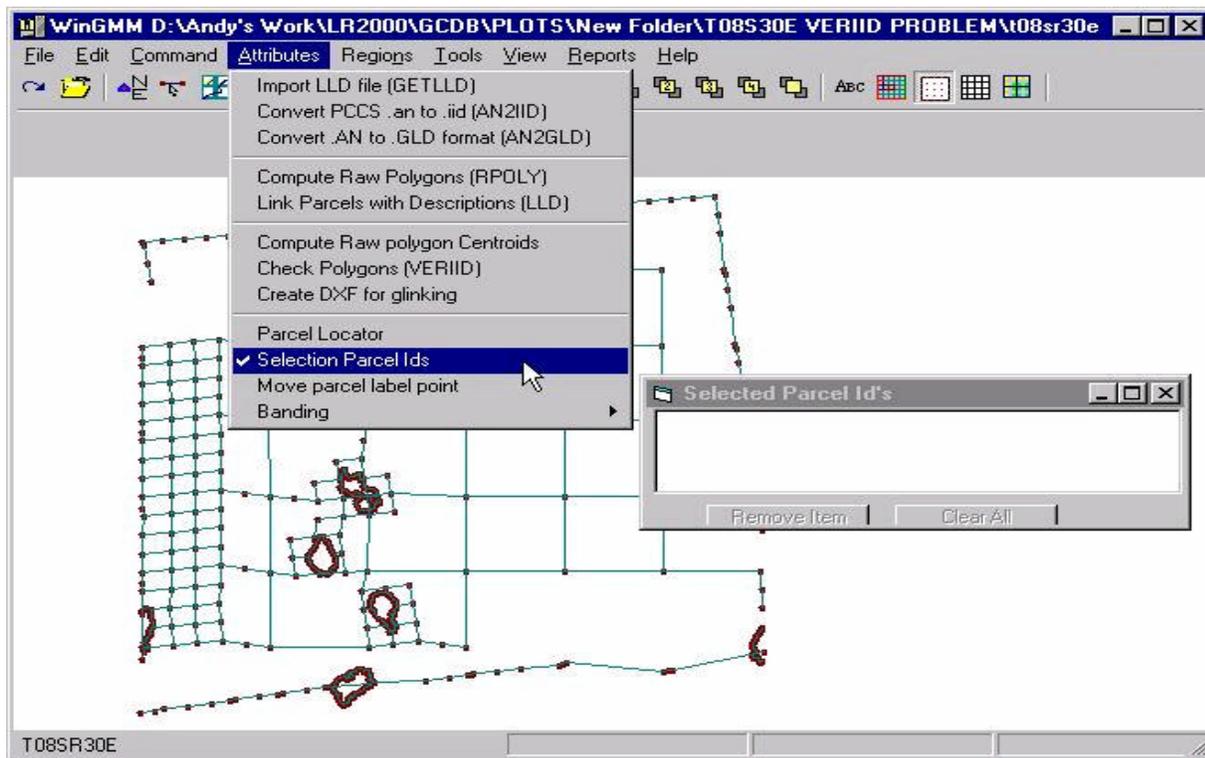
Selecting "Selection Parcel IDs" brings up the "Selected Parcels Id's" window.

Next, Enable the "View Parcel" icon from the Toolbar.
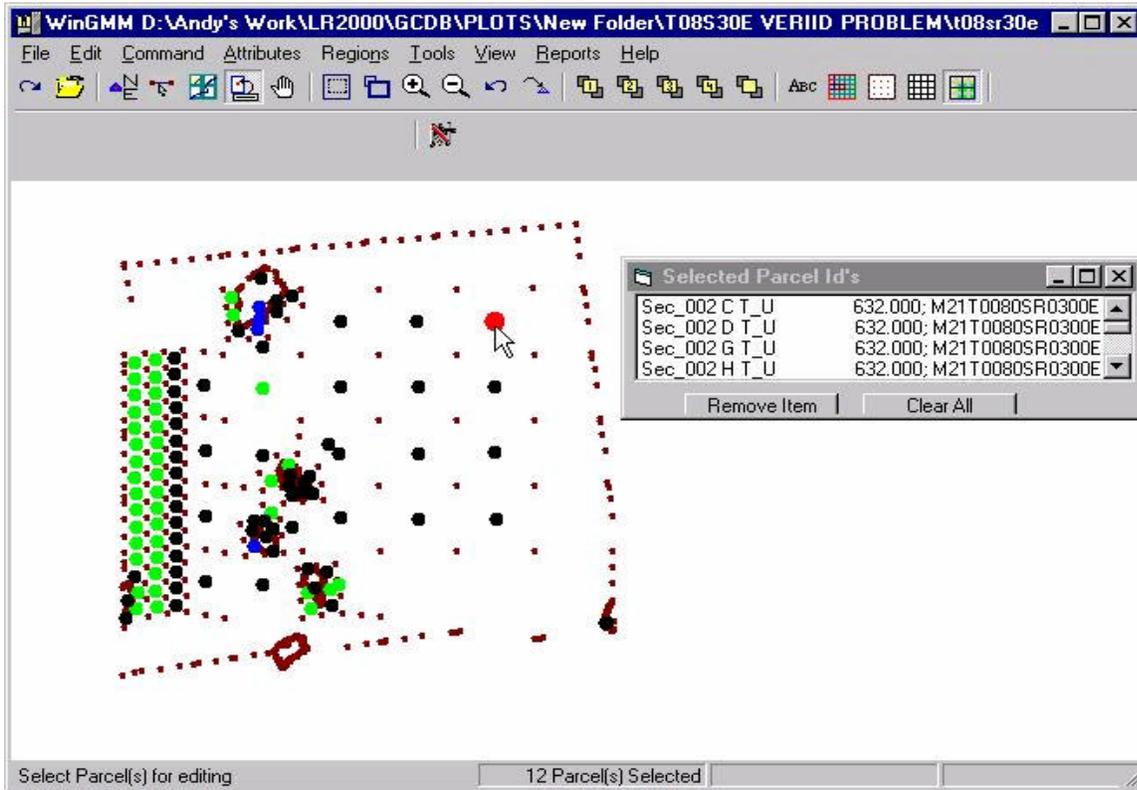
This displays the centroids. From the plot graphic select a centroid with a left-mouse click. The centroid will highlight and attributed data for the centroid appears in the display window. The display shows section, nominal location, survey type, survey number, survey suffix, and acreage. You can select as many points as desired.

If more than the intended centroid highlights, the user must zoom closer to achieve greater separation between centroids.

To edit incorrect attribute data, right-mouse click on the highlighted centroid to bring up this menu window.
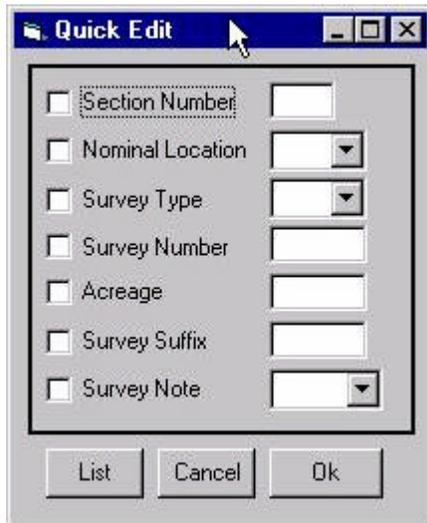
Selecting <u>Quick Edit</u> brings up this window. It allows the same edits to be made to all centroid attribute data displayed in the Selected Parcel Id's window.
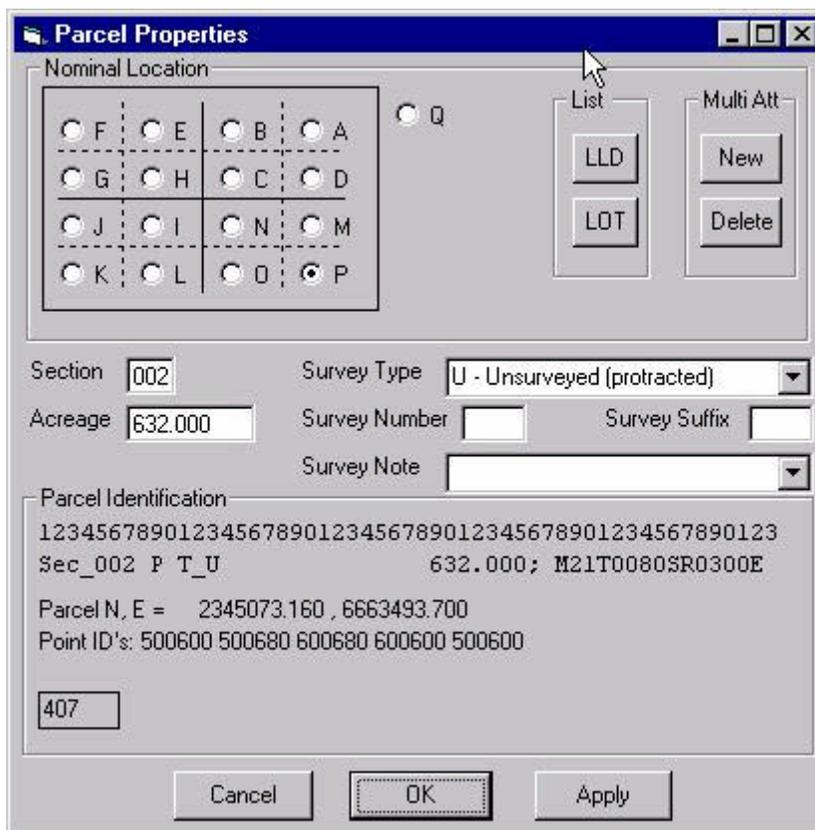
Selecting <u>Parcel Properties</u> allows detailed editing of the attribute that is highlighted in the "Selected Parcel Id's" display. To highlight an attribute simply left-click on the desired attribute in the display.

Selecting the LLD button in the "Parcel Properties" display pops up another window that lists out the township.lld file (Legal Land Description from LR2000).
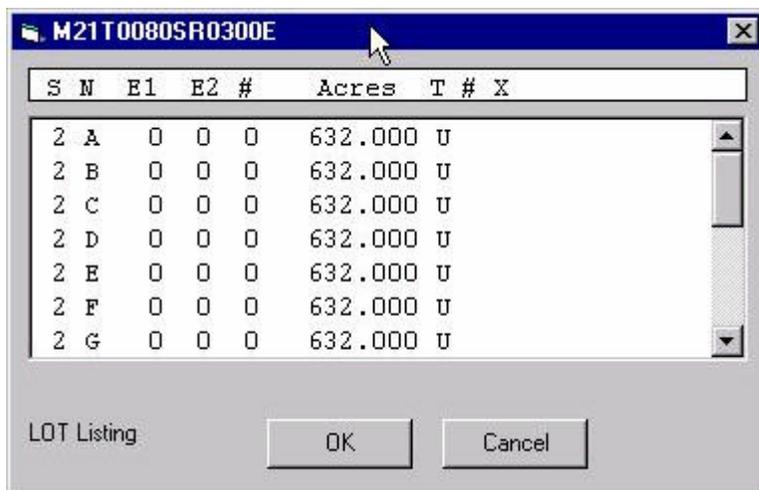
Selecting "LOT" pops up this window that lists the township.lot file.

Selecting the "New" button adds an extra attribute (remember some centroids require multiple attributes) to the centroid, but only one new attribute may be added per highlighted attribute in the "Selected Parcel Ids" display. After selecting "New" pick "Apply " and highlight another attribute associated with the selected centroid to continue adding other attributes using the "New" button. When all additions have been made click OK to save.

Selecting the "Delete" button allows the deletion of the attributes highlighted in the "Selected Parcel Ids" display. Pick "Apply and OK" to complete the deletion.

MOVE PARCEL LABEL POINT

To run MOVE PARCEL LABEL POINT: From the WinGMM main window menu, select "Attributes/Move parcel Label Point"
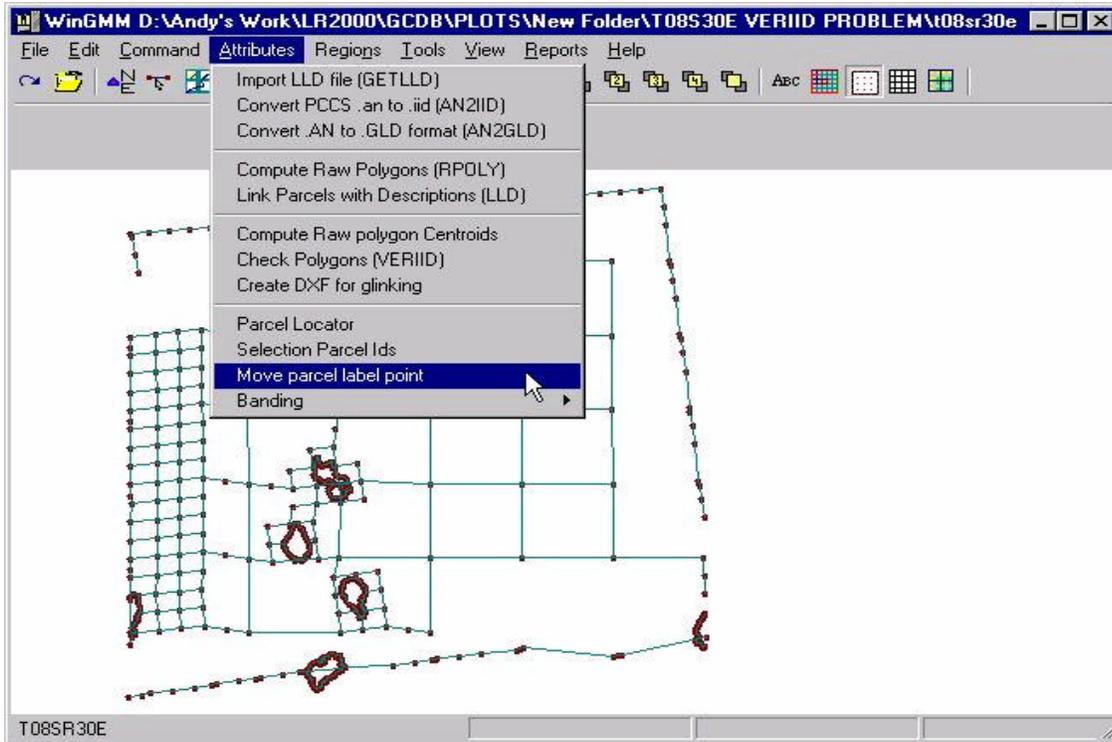
Purpose of Move Parcel Label Point: Allows the user to move one or more centroids to different locations
either within or outside a polygons boundaries. This is useful if
centroids are positioned too close to parcel boundaries. The project can
be closed and reopened with the centroid remaining in the moved
location. Running LLD will move the centroid back to its
original position in the polygon.

Prompting: None

MOVE PARCEL LABEL POINT SCREENS
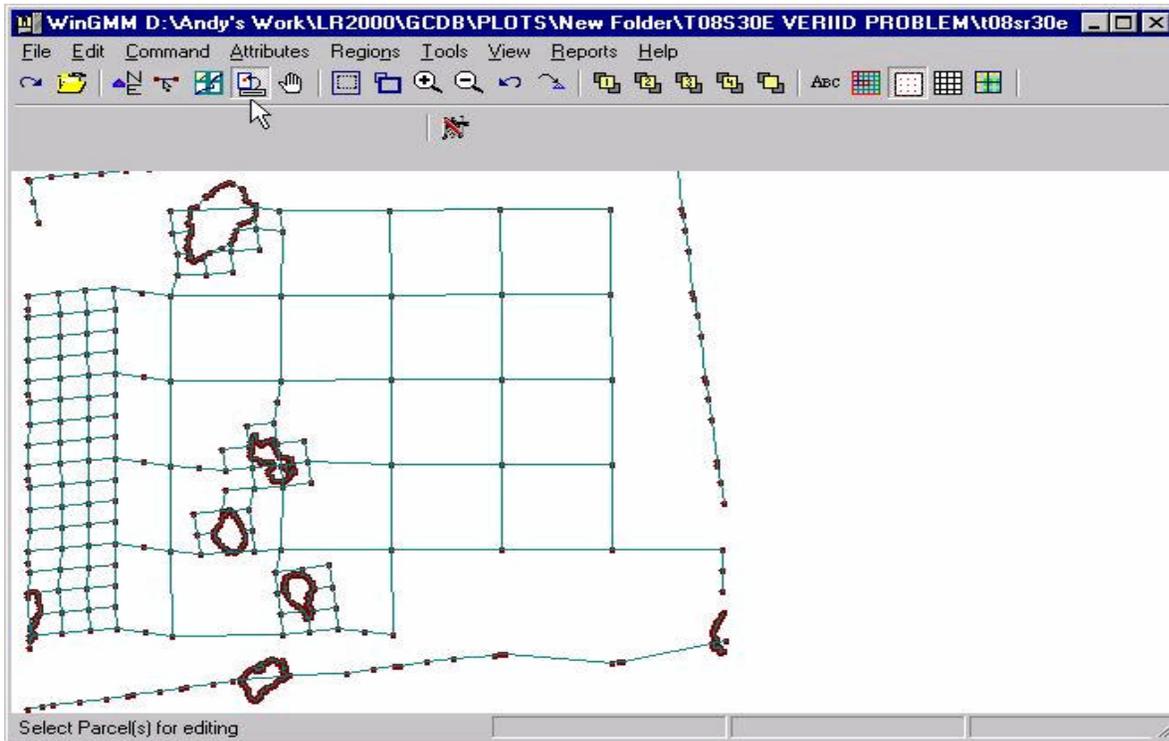
Start the process by selecting the Select Parcel icon from the toolbar.
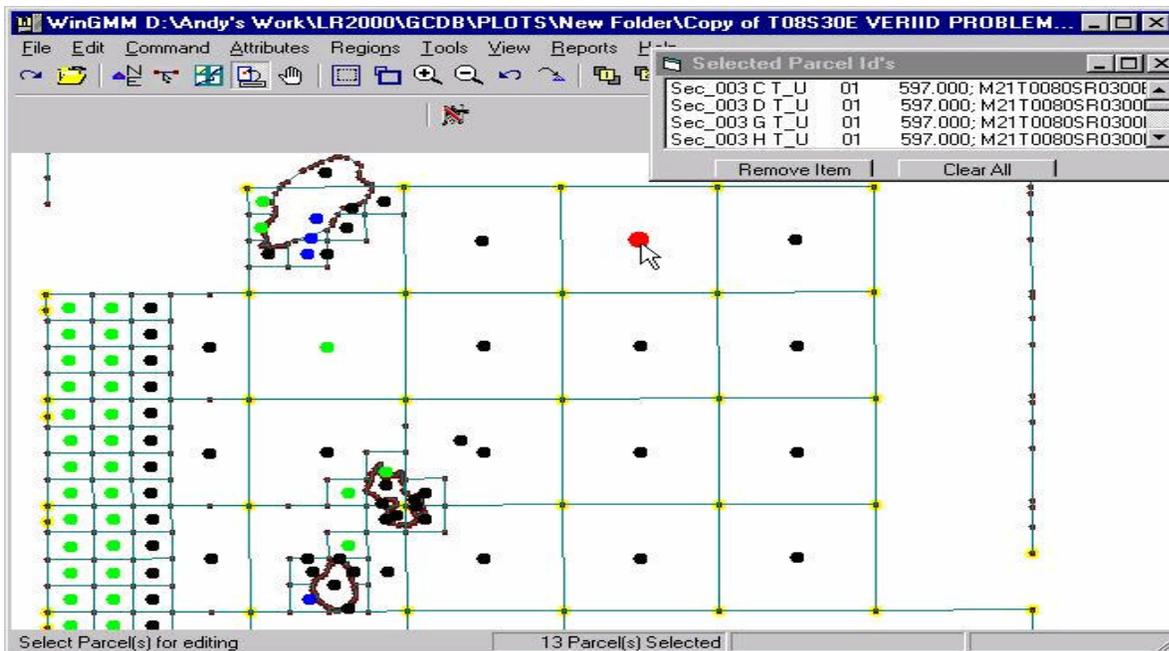
Select the desired polygon centroid to be moved. It will highlight and the attributes will be displayed in the "Selected parcel Ids" window
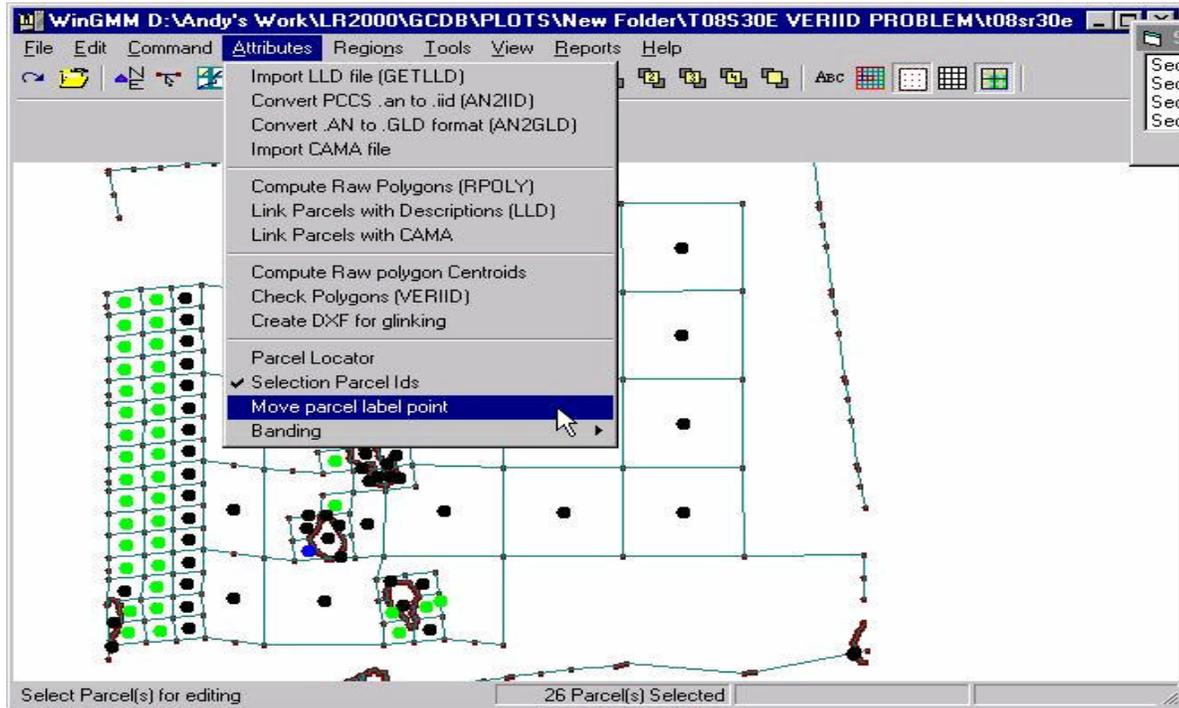
From the Attribute pulldown menu select "Move parcel label point."
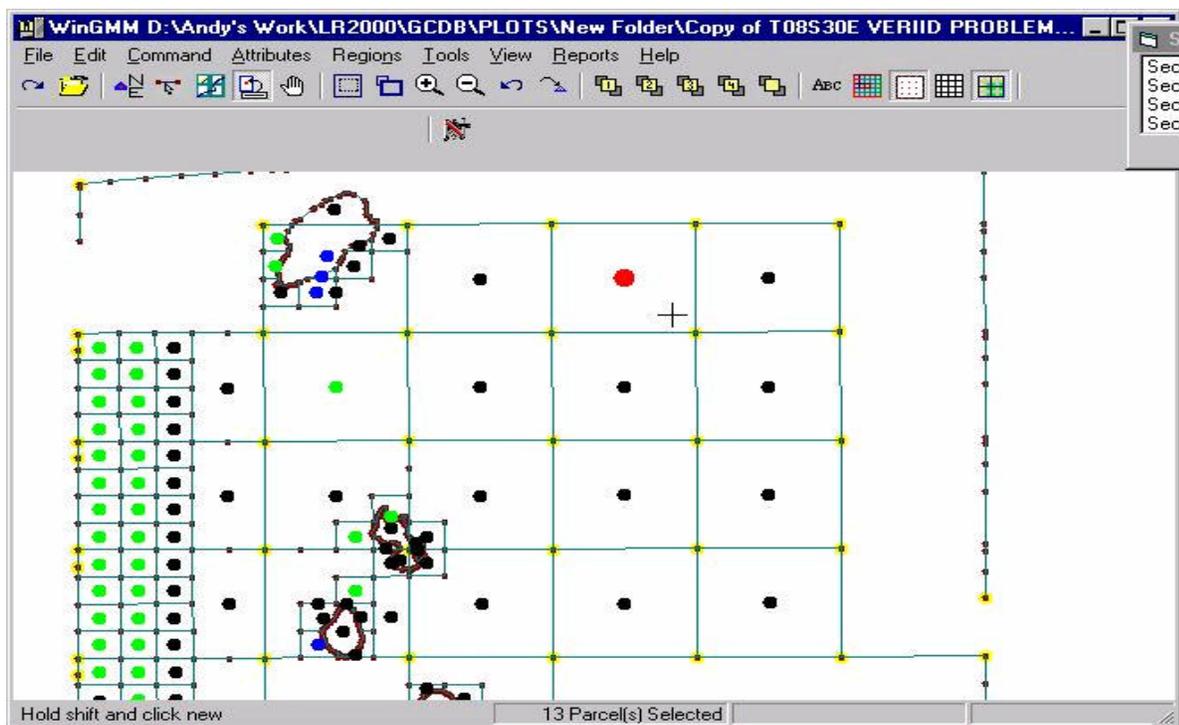
Position the resulting crosshair to the location where the centroid is to be moved. It can be located anywhere on the project plot. While depressing the SHIFT key, click the Left mouse button and centroid is assigned new position.
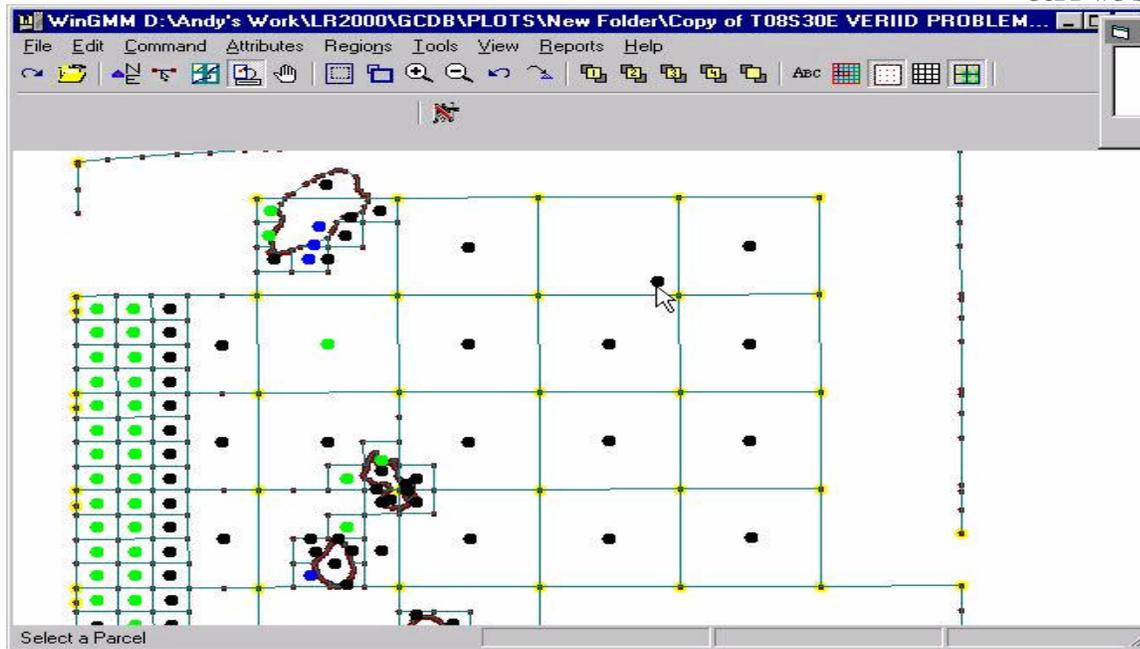
The centroid moves to the new location. It will remain in this location until LLD is run on this project at which time it will return to its original location in the polygon.

BANDING

To run BANDING: From the WinGMM main window menu, select "Attributes/Banding/Select the Desired Item"
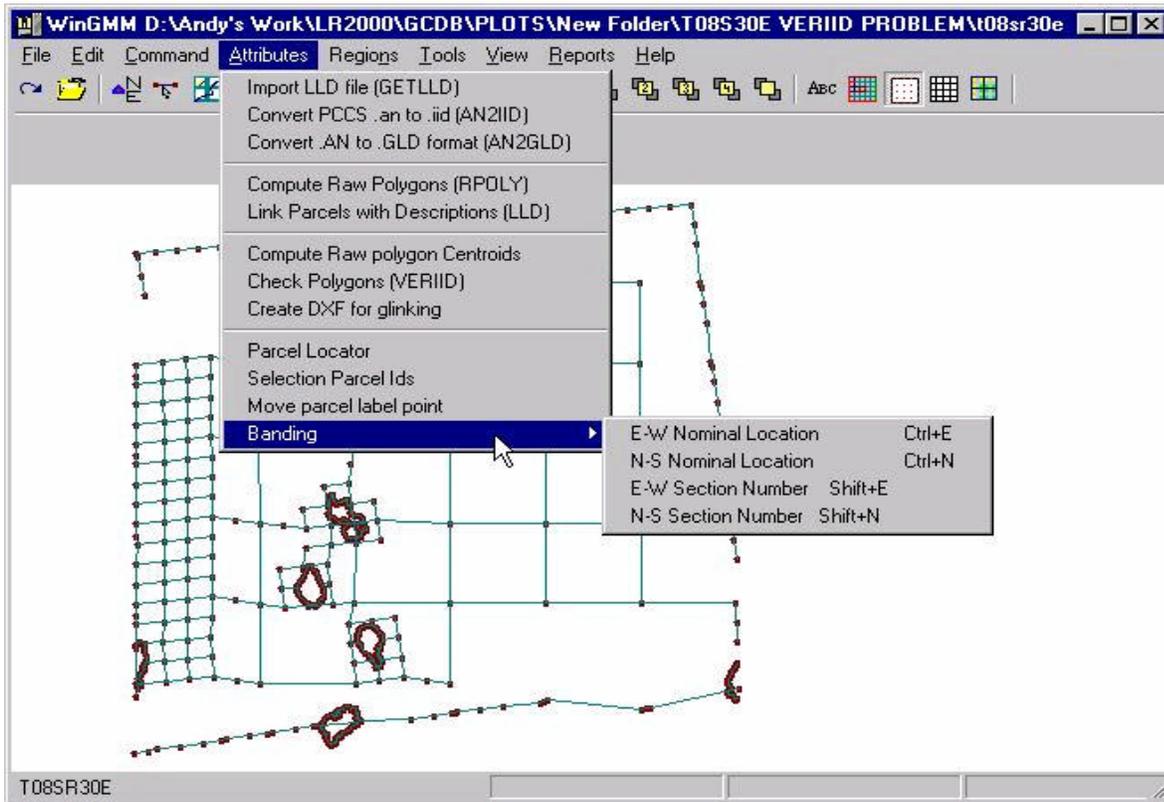
Purpose of BANDING: Banding can tell the user, at a glance, what the LLD process has done when automatically assigning attributes to polygons. It will present a color graphic of the Nominal Location or Section Number that was selected.

BUILD/EDIT REGIONS

To run BUILD/EDIT REGIONS: From the WinGMM main window menu, select "Regions/Build/Edit Regions"
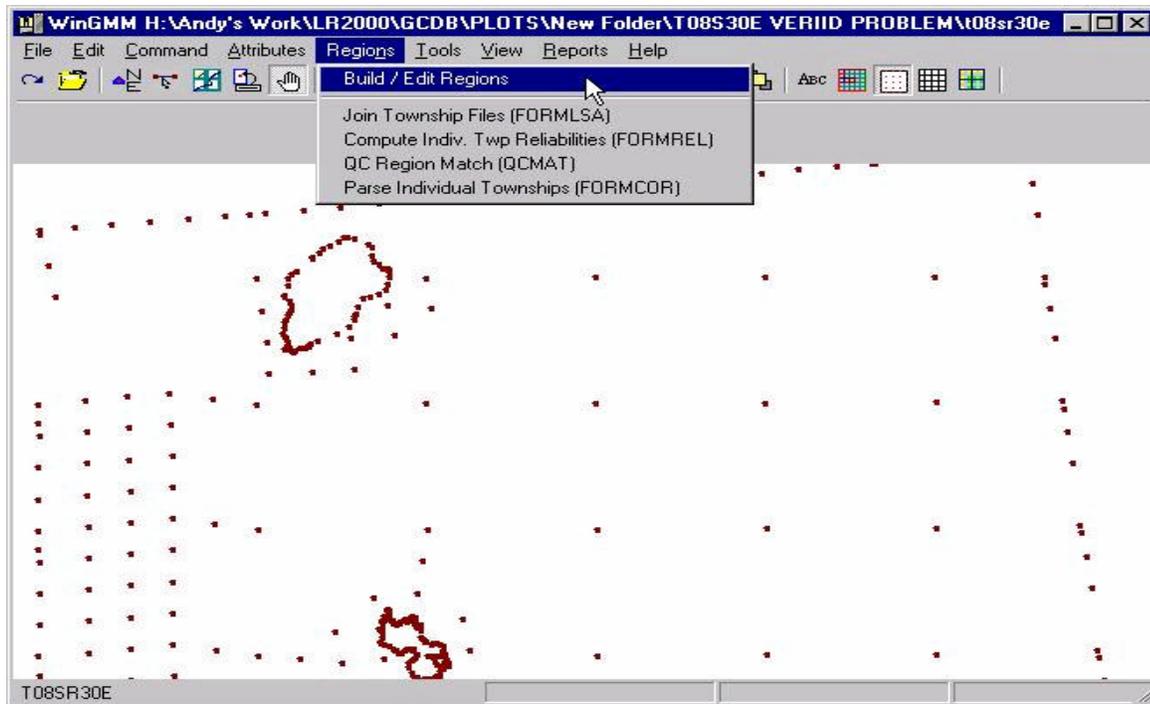
This brings up the following screen.
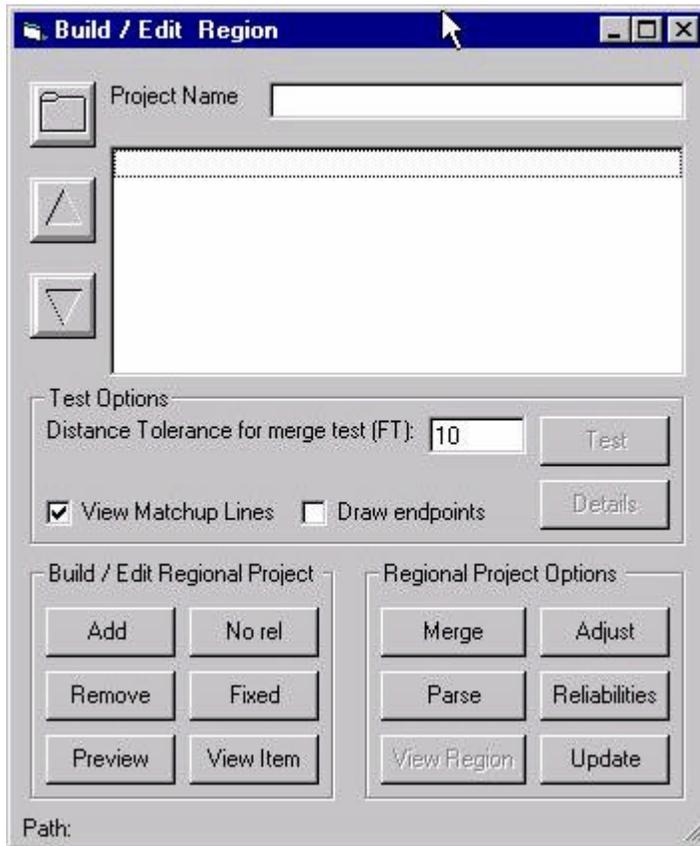
Button Function Description

    Test Options

        Distance tolerance for merge test (ft) – Enter a distance value for coordinate match test.

        Test – Perform the testing on project boundaries prior to merging of project data.

    Build/Edit Regional Project

        Add – Select a project to add to the listing.

        Remove – Remove highlighted item from the listing.

        Preview – Preview the region.

        No Rel – Insert keyword

        Fixed - Insert keyword. The list of townships below the FIXED keyword in the display are fixed boundaries.

        View Item – Load selected project for viewing and editing.

    Regional Project Options

        Merge – Merge projects with the FORMLSA program. (User input: Input coordinate tolerance)

        Adjust – Adjust region with LSGMMW program. (User input: None). Updates the .ADJ file.

        Parse – Parse adjusted region coordinates to individual projects with FORMCOR program. (User input: None)

        View Region – Load the region project data. (User input: None)

        Reliabilities – Compute coordinate reliabilities with FORMREL program. (Users input: see Post Region Update screen). Updates the .PGC file.

        Update – Perform batch update procedures on individual update projects. Update automatically runs the following executables: APROPW, UTMW, GETLXW, VERIID, and AN2GLD. Updates the .AN, .COR, .GEO, .INT, .LSA, .LX, .LXN, .GLD, .SUB, .UTM, and .VER files.

RELIABILITIES Function --

Clicking the "Reliabilities" button (automatically does):
- Checks to ensure that project properties are correctly set to read from .sd (required)
- Backs up the original region
- Modifies list, replacing FIXED with NOREL
- Performs new merge (pause for you to reply on tolerance)
- Then loads the new merge for viewing. A small window appears in the lower right corner of view screen - "**cancel**" or "**continue** -->" are your options.

"Cancel" will be chosen if something wrong with the merge or you change your mind about reliabilities. Original region restored and viewed. Reliabilities operation is aborted.

"Continue" continues the reliabilities operation...runs FORMREL, then restores original region.

When you click the reliabilities button, a new merge is done with FORMLSA, then runs FORMREL to update the individual townships. When it's completed, click "View Region" to reactivate the UPDATE button.
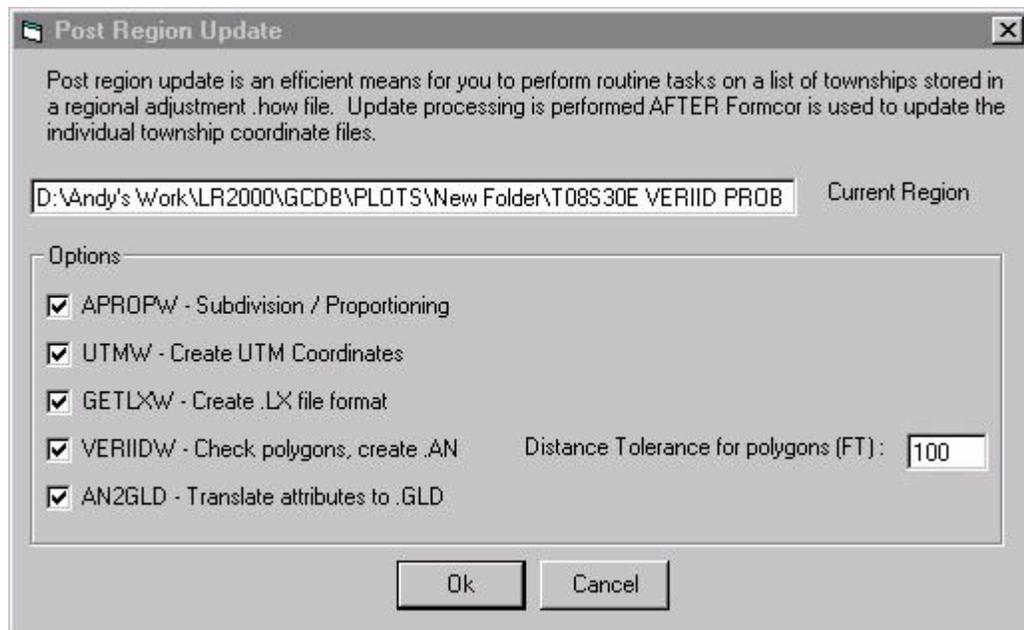
Update button screen

VIEW

PARCEL LABELING POINTS

To run PARCEL LABELING POINTS: From the WinGMM main window menu, select "View/Parcel Labeling Points"
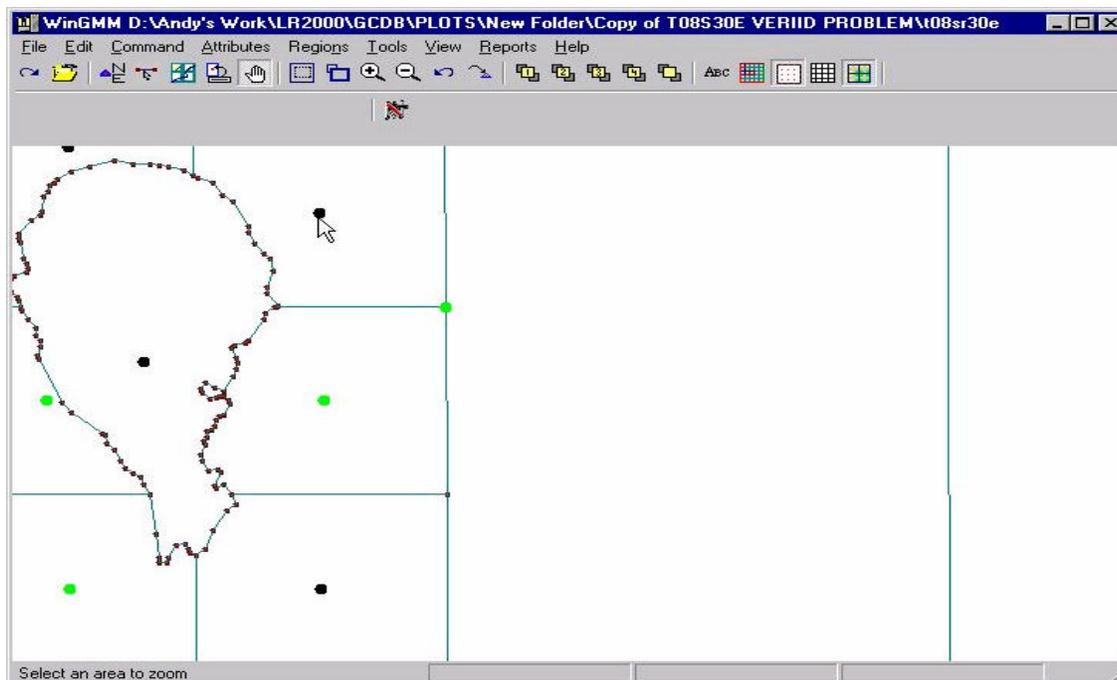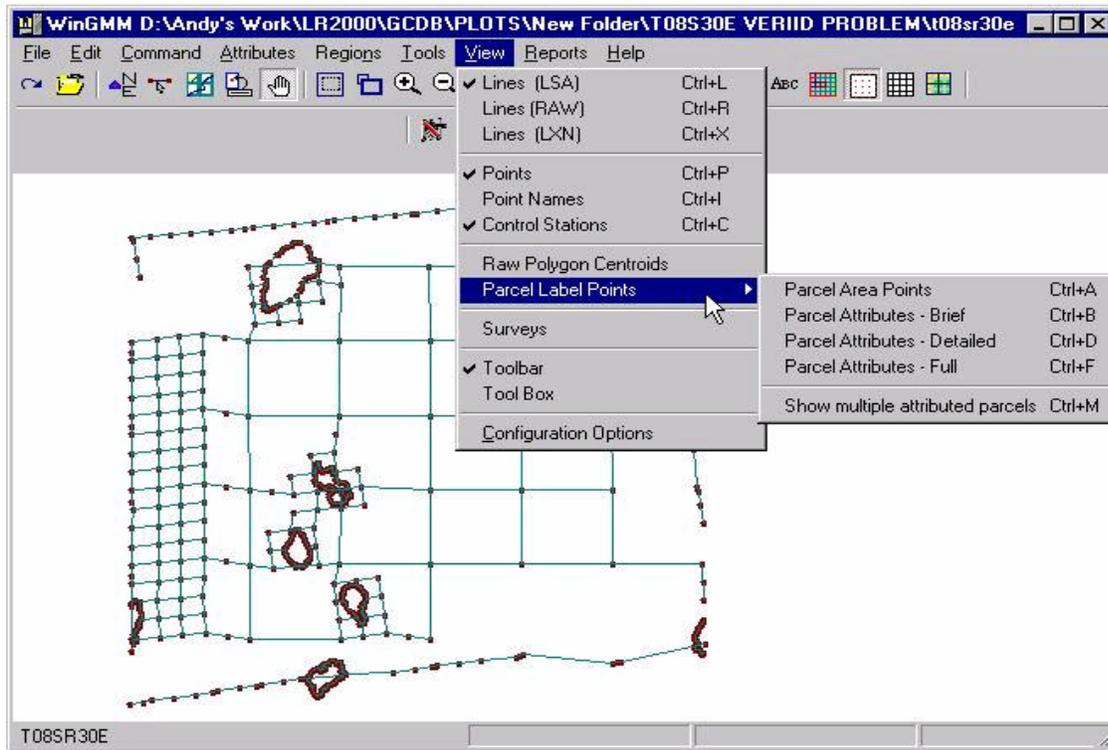
Parcel Area **Points** – Shows where centroids are physically located.
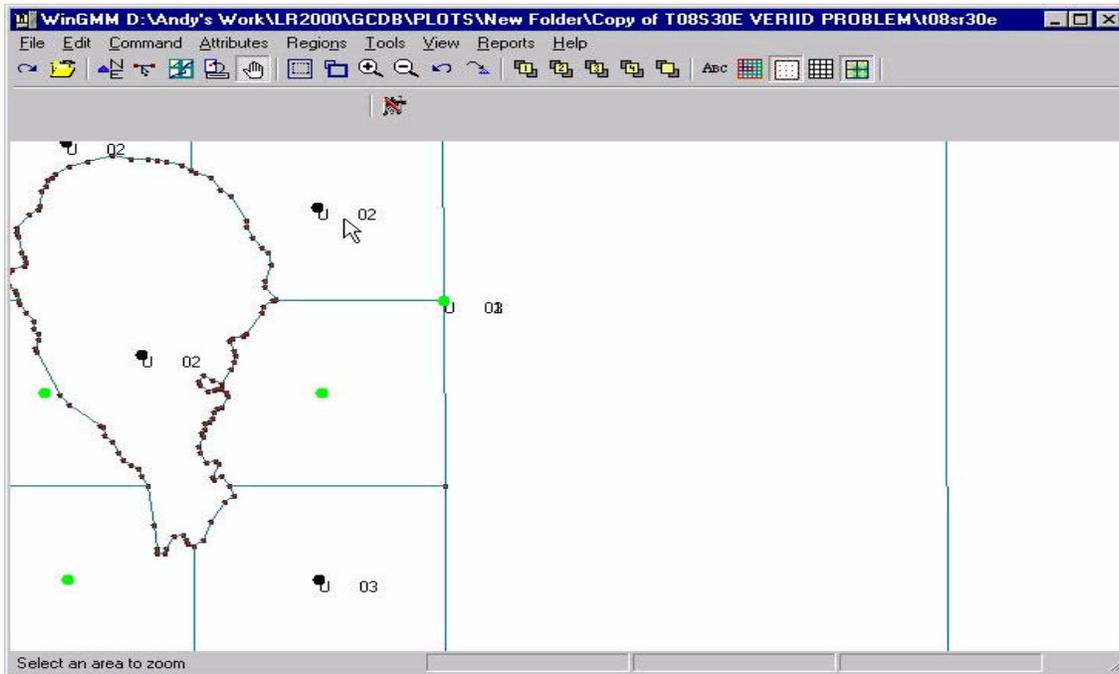
Parcel Attributes Brief – Shows abbreviated attribute labels with survey type and number.
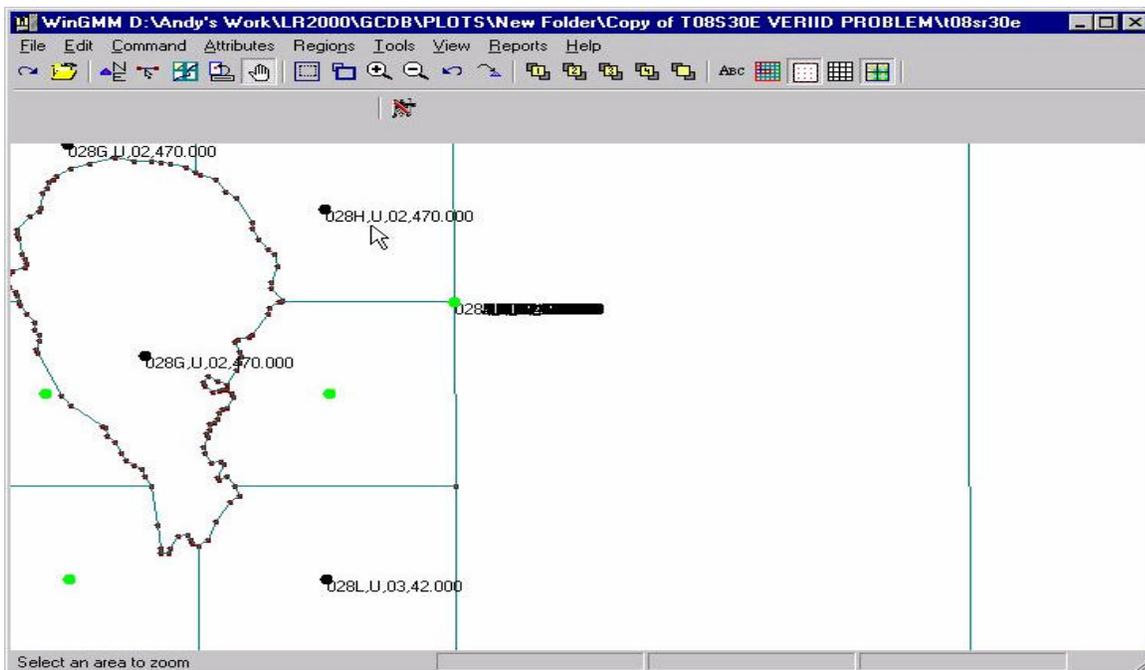
Parcel Attributes Detailed – Displays more details about the attributes (Section, Nominal, Survey type, and Acreage).
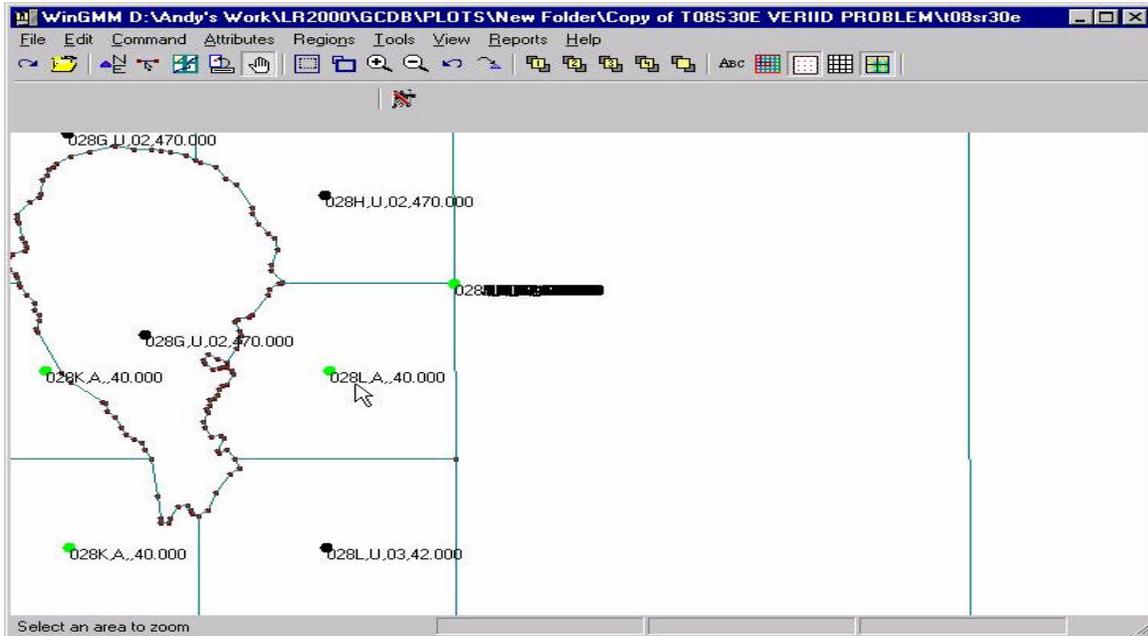
Parcel Attributes Full - Shows data from the Detailed view but also includes those attributes labeled with Aliquot part descriptions.
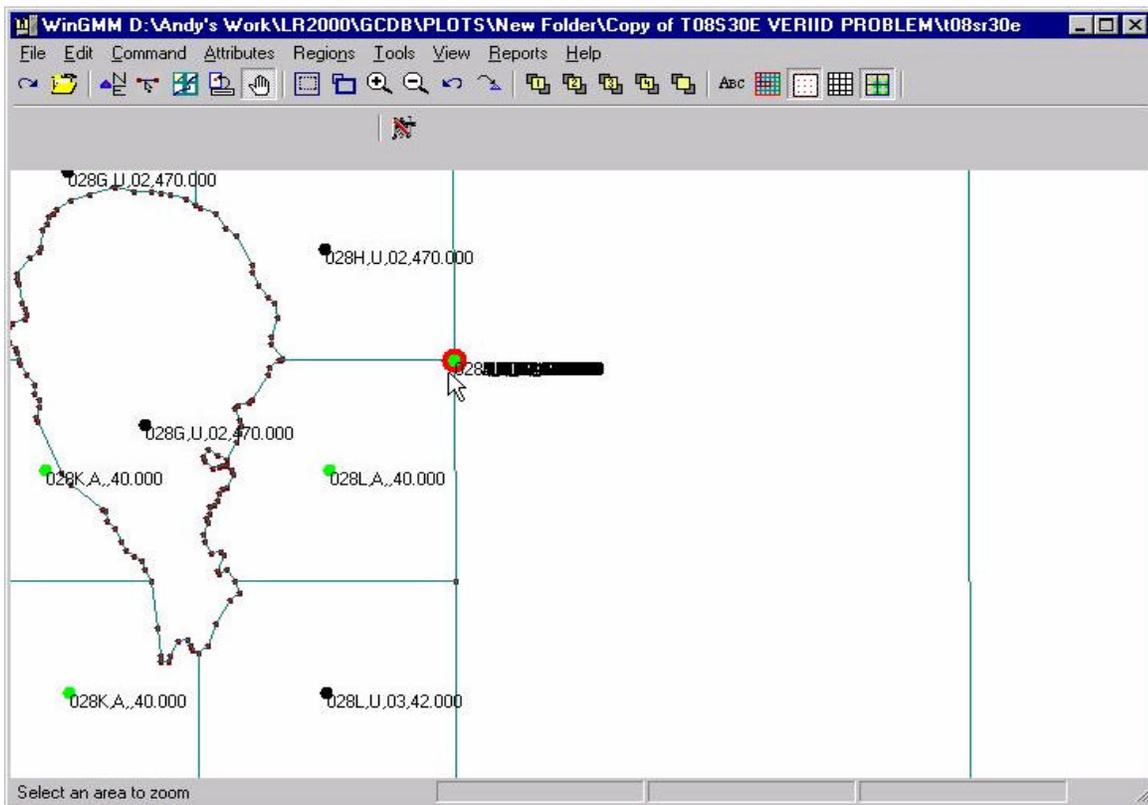
Show Multiple Attributed Parcels – Shows polygons that have multiple attributes assigned.

SURVEYS

To run SURVEYS: From the WinGMM main window menu, select "View/Surveys"
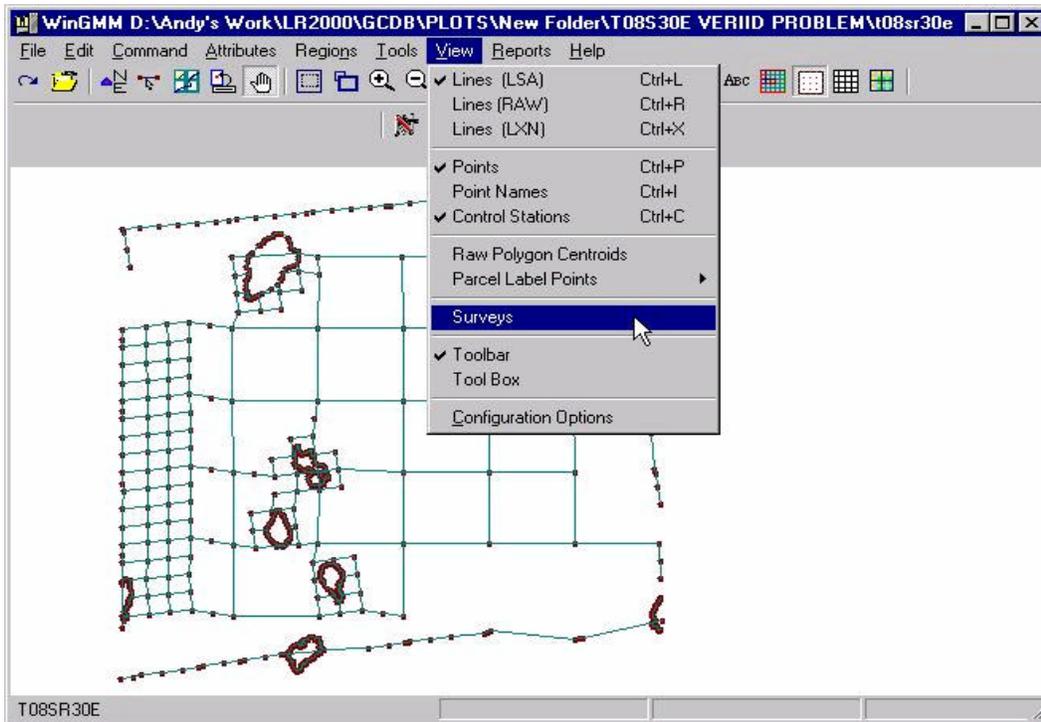
This brings up a screen called Survey ID's where one can select a given SID to view. Making a selection causes the item to highlight in the menu and the selected SID boundary lines to also highlight on the plat GUI.
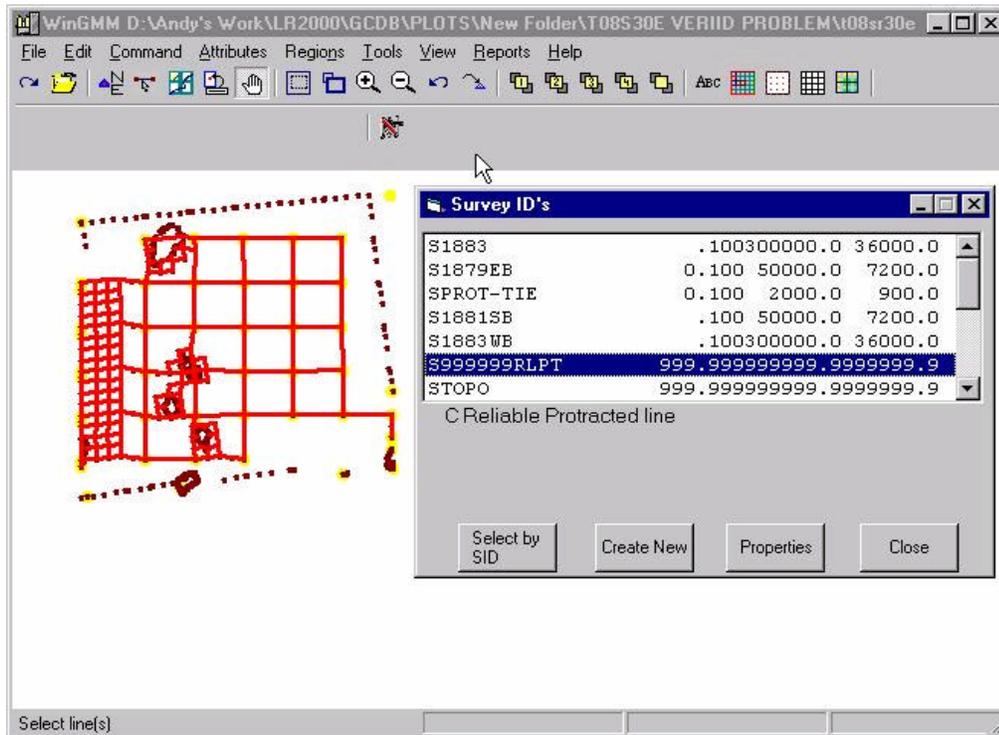
Selecting the Survey ID's window, "Properties button" pops up a window with information about the SID file and allows the user to edit that SID information. brings up a narrative commenting about the survey.
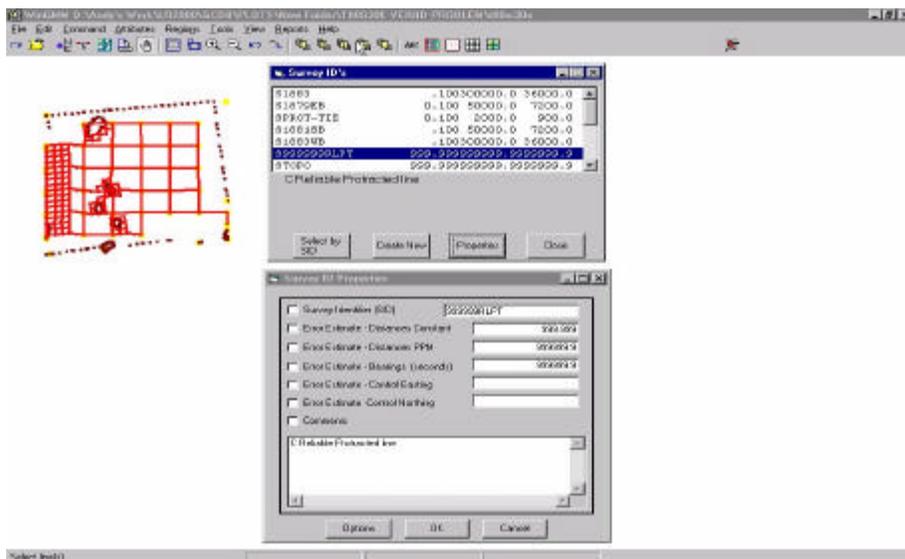
Clicking on the Options button brings this screen. Distance units, Distance Type, Bearing and other parameters can be specified. Unless defined, distances are in chains at ground level and bearings are mean geodetic. Click OK to enter the changed data.

Selecting the Survey ID's window, "Create New" button, brings up the same screens as the Properties button except the fields are blank. The Option button brings up the same screen with the same defaults as Properties. This allows you to make a new SID. It's a GUI for SID maintenance within INRAWW.
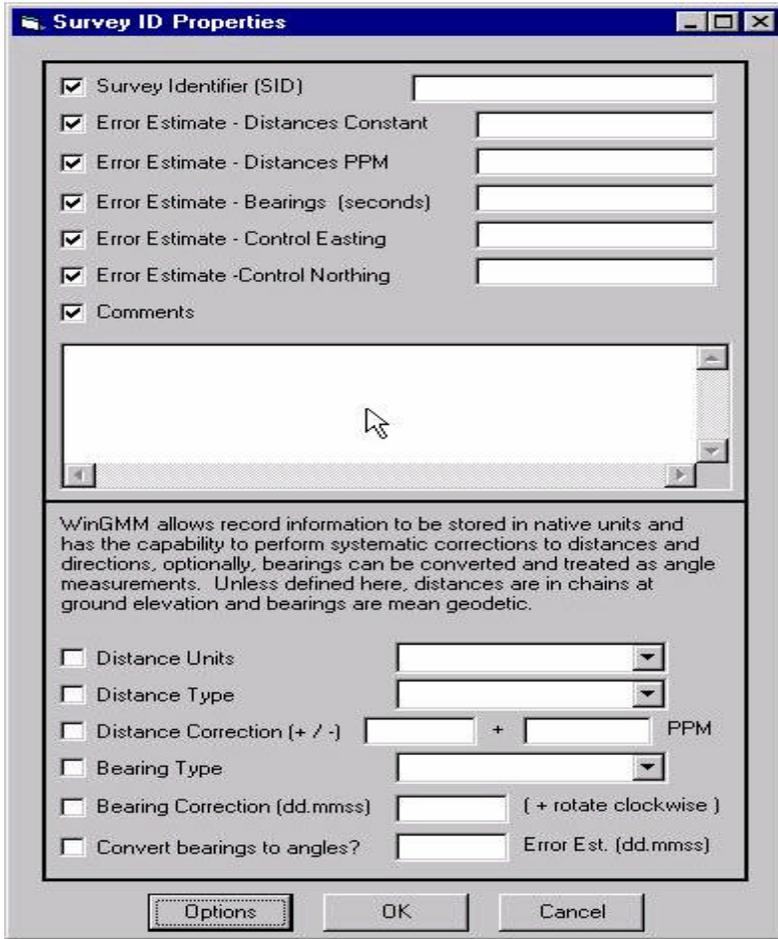
Selecting the Survey ID's window, "Select by SID" button, brings up a window call "Selected Lines". This details all RAW lines associated with this survey id. Remove Line and Print are self-explanatory. The Edit Line and Change SID buttons are explained in the following screens.

 Edit any line by selecting the line and click the "Edit Line" button.
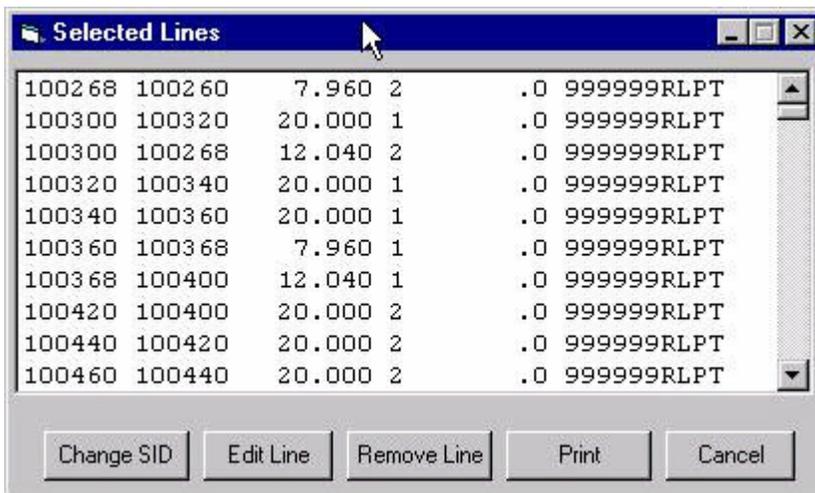
This brings up the "Edit Line Segment" window where changes are made.
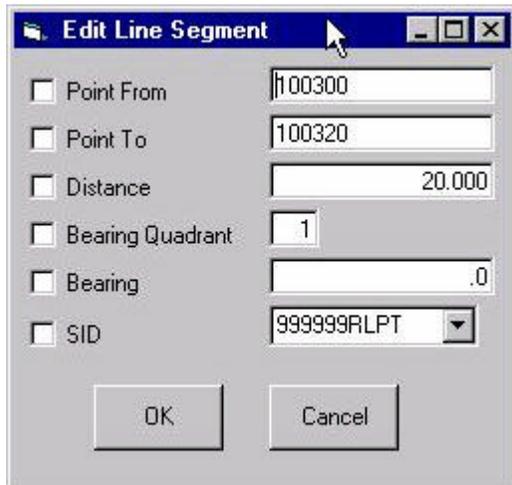
When satisfied with the changes, selecting the OK button. This WinGMM screen pops up as a last chance to go back. Select <u>Yes</u> to make the changes.
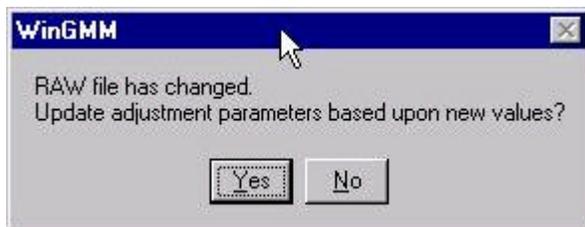
Selecting the "<u>Change SID</u>" button allow for the changing of all RAW selected RAW lines.

Click Yes if this is what you what to do.
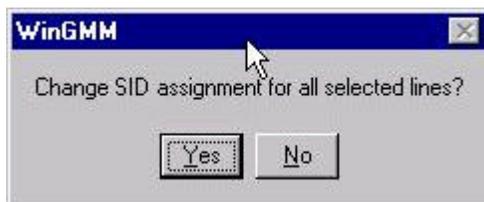
In this screen browse to select the line to change. When satisfied, select the OK button.

This WinGMM screen pops up as a last chance to go back. Select <u>Yes</u> to make the changes.

WinGMM

RAW file updated
Update weights based upon new SID assignment?

Yes   No

CONFIGURATION OPTIONS

To run CONFIGURATION OPTIONS: From the WinGMM main window menu, select "View/Configuration Options"
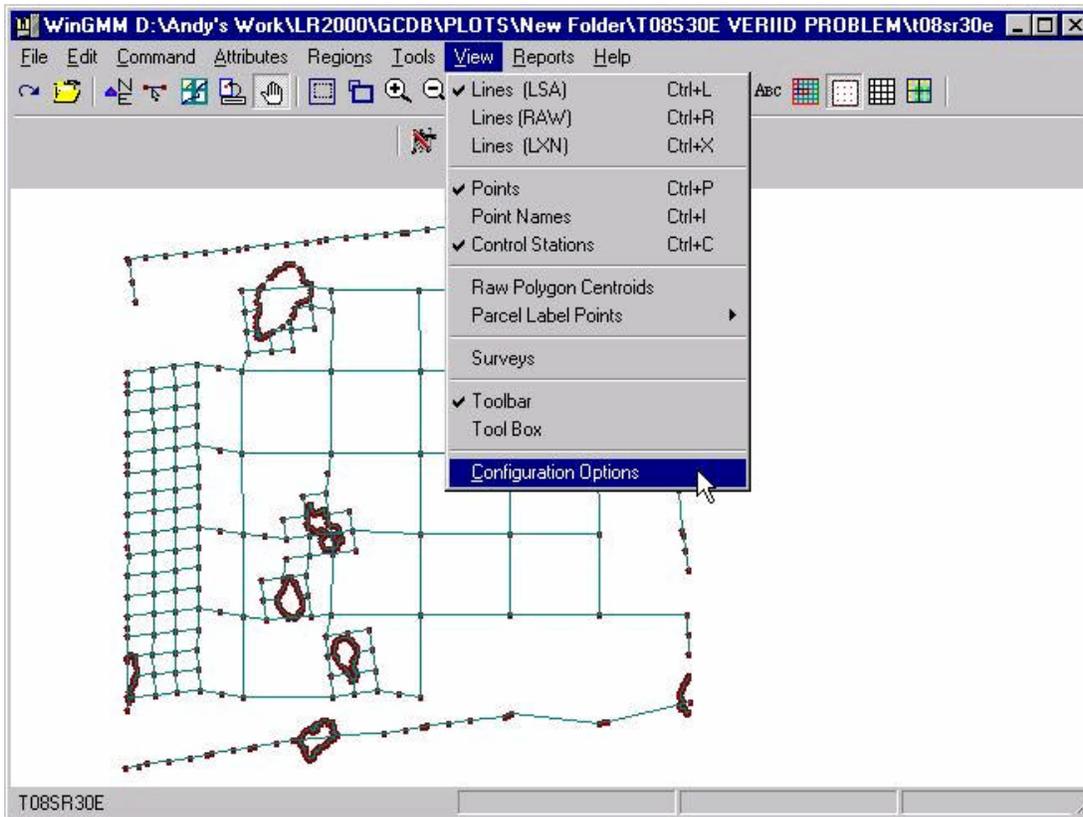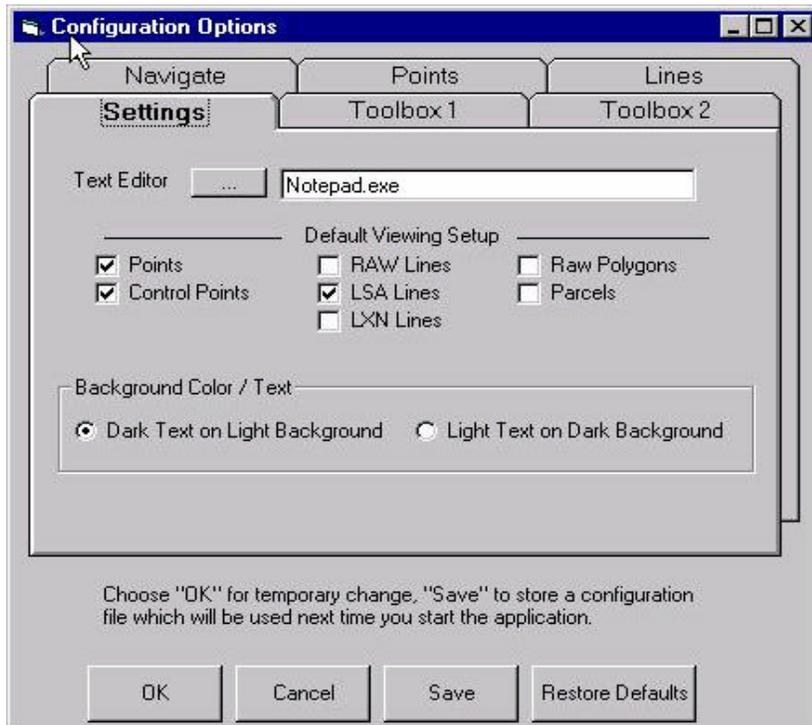
The SETTINGS screen allows the user to select which Text Editor will be used as a default, what the Default Viewing graphics will display, and how to display the Background color and text.
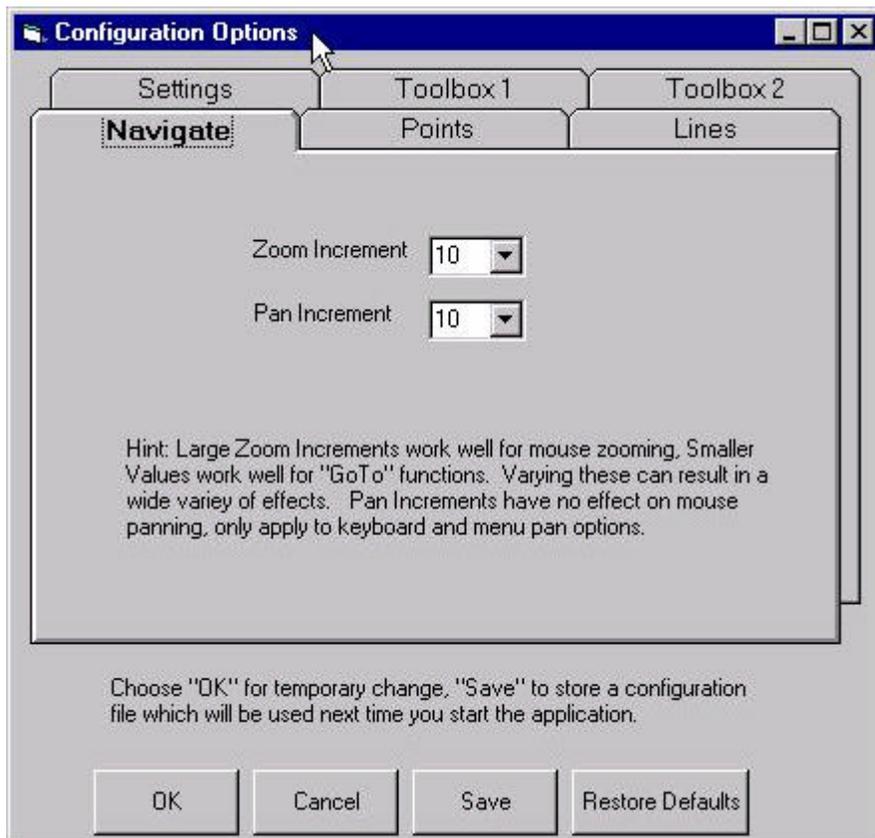
The NAVIGATE screen defines what the Zoom and Pan increments will be.
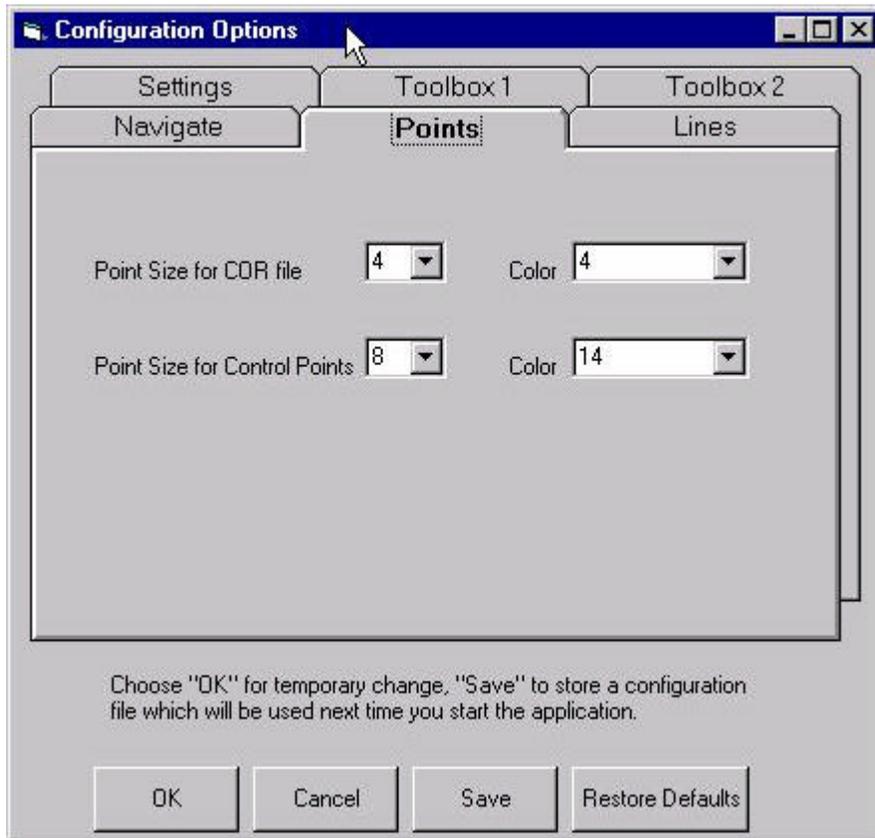
The POINTS tab defines the symbol size and color for points contained in state plane zone and control coordinates files.
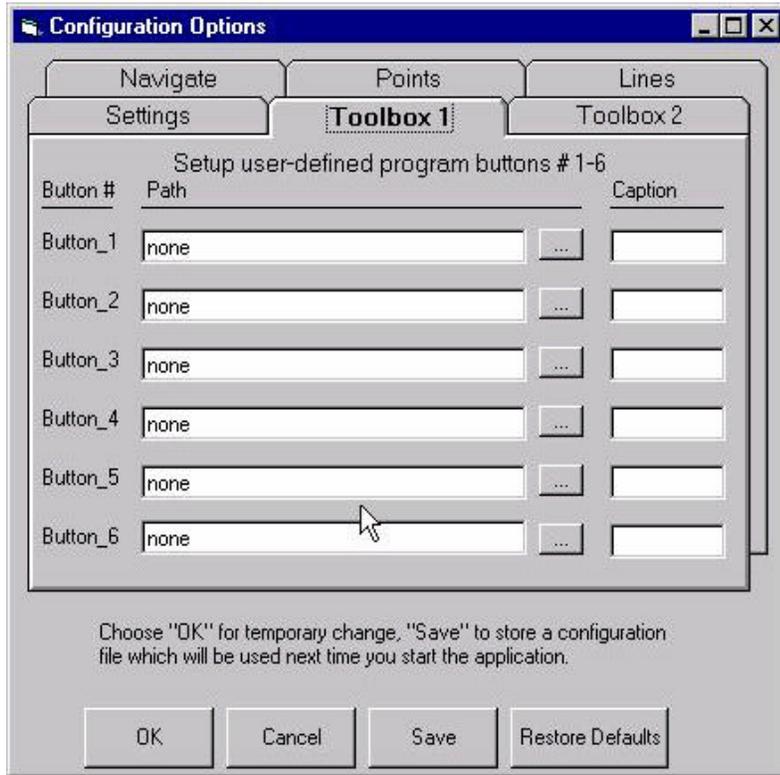
To add a program or a batch file to either Toolbox 1 and 2, perform the following:

1) Go to the View pulldown and click on "Configuration Options".
2) When that menu pulls down, select "Toolbox 1" or "Toolbox 2" tab.
3) Then for button #1, pick the ellipsis ("..." box) and WinGMM pops up a Windows browser that allows you to navigate your hard drive. Go to the directory where the .EXE is and select it. It will show up in the box between "button_1" and the ellipsis.
4) In the box to the far right, type in what you want to name this executable. Then click on "Save" to make it permanently a part of your toolbox or "OK" for only the current session.
5) Now, go to the WinGMM main window menu "View/Tool Box" option and you should see a moveable box pop up on your screen. One button is labeled the name given in step 4 along with 11 other blank buttons.
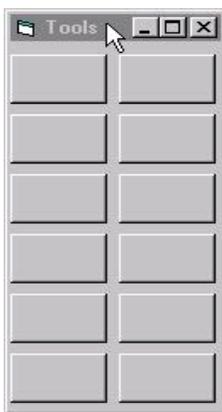
6) Click on the NAMED button, and the program will start.

7) Position the Tools window as desired on the screen where it is out of the way. You can minimize this
floating box if it becomes bothersome and pop it back up by clicking the "Tools" box on the tool bar
at the bottom of the screen.

8) If the Tools window is CLOSED and then turned back on using "View/Tool Box", you may get
"button_1", etc. for labels on these buttons. If that happens, go to configuration options, pick "toolbox 1"
and then just click OK and everything will look normal.
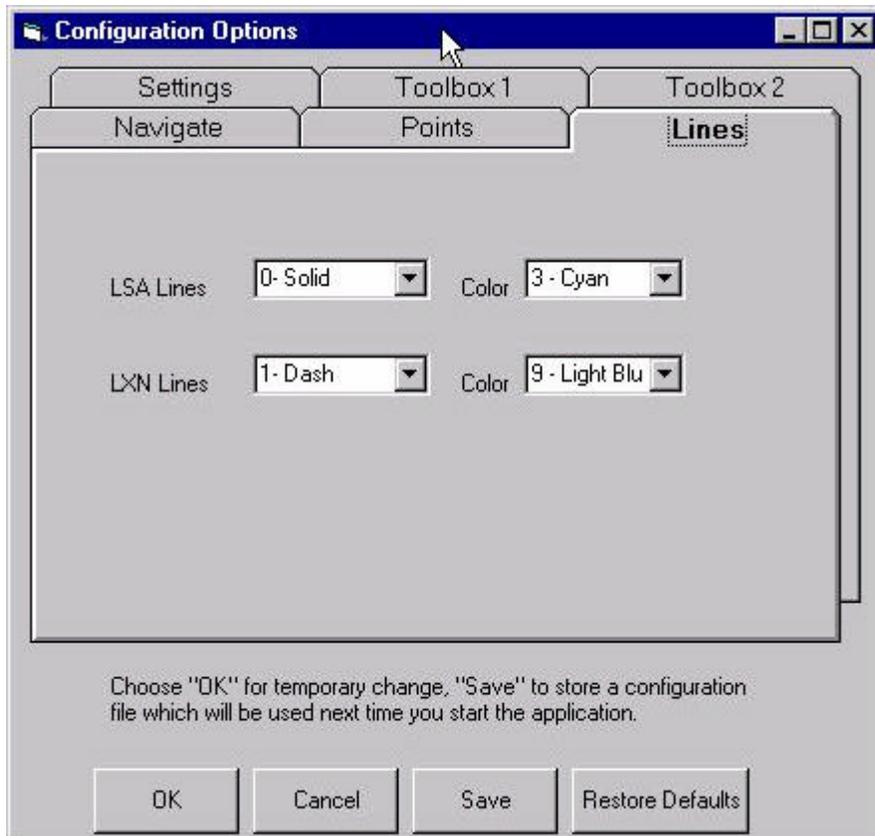
The LINES tab allows the user to define lines contained within the LSA and LXN file, with changeable graphic
display for line type and color.

REPORTS

PROJECT REPORT

To run PROJECT REPORT: From the WinGMM main window menu, select "Reports/Project Reports"
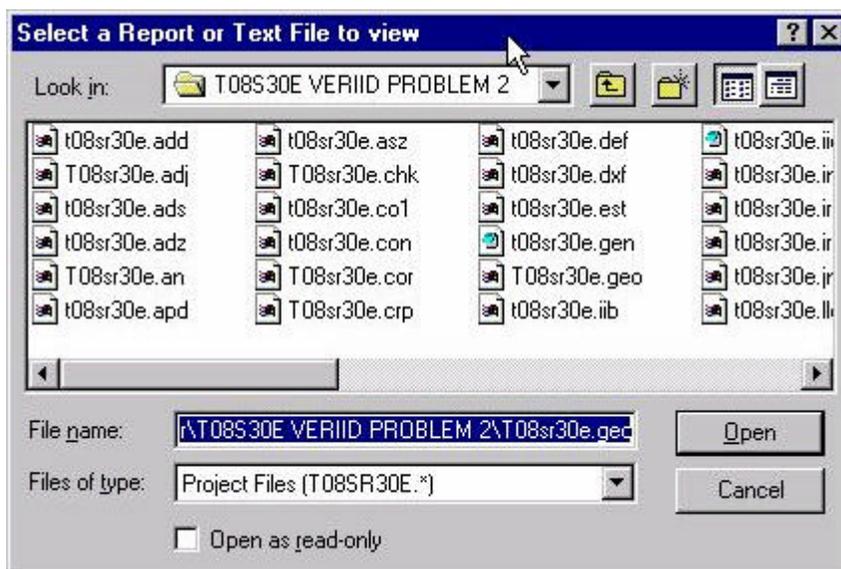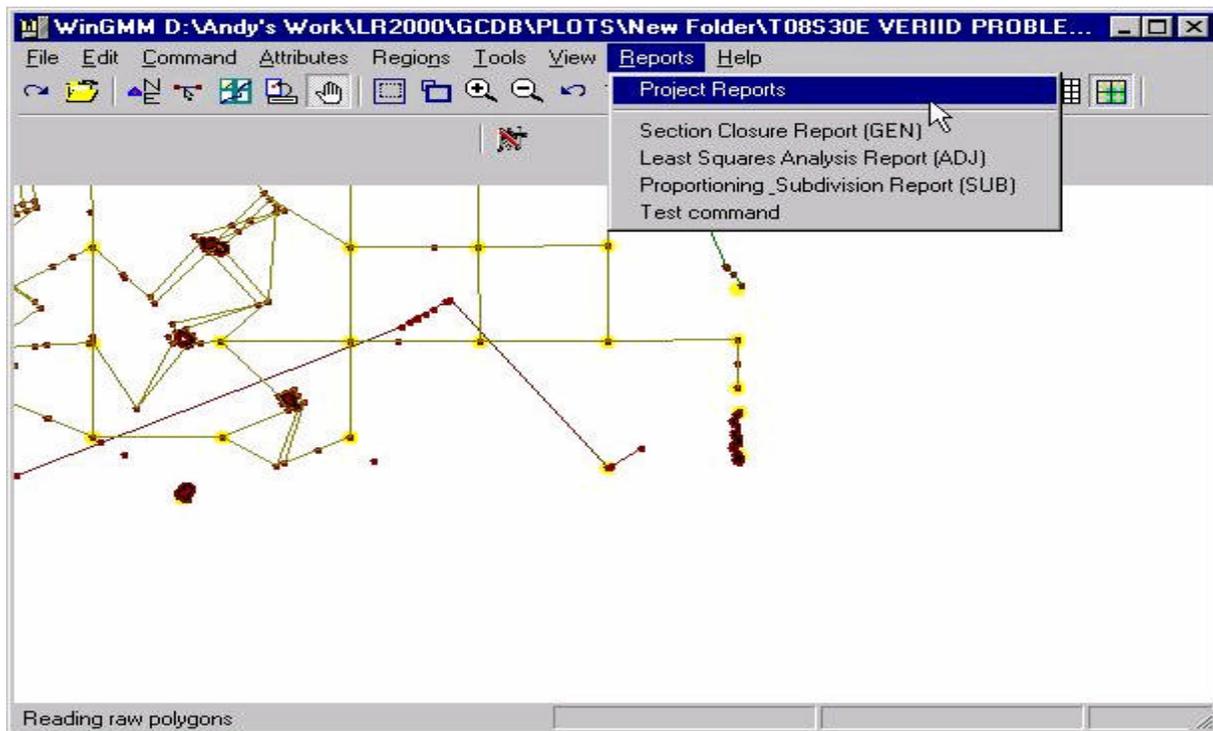
The user can view any of the files listed for the current project. Selecting the desired file will automatically open it in the default text editor.

SECTION CLOSURE REPORT (GEN)

To run SECTION CLOSURE REPORT (GEN): From the WinGMM main window menu, select "Reports/Section Closure Report (GEN)"
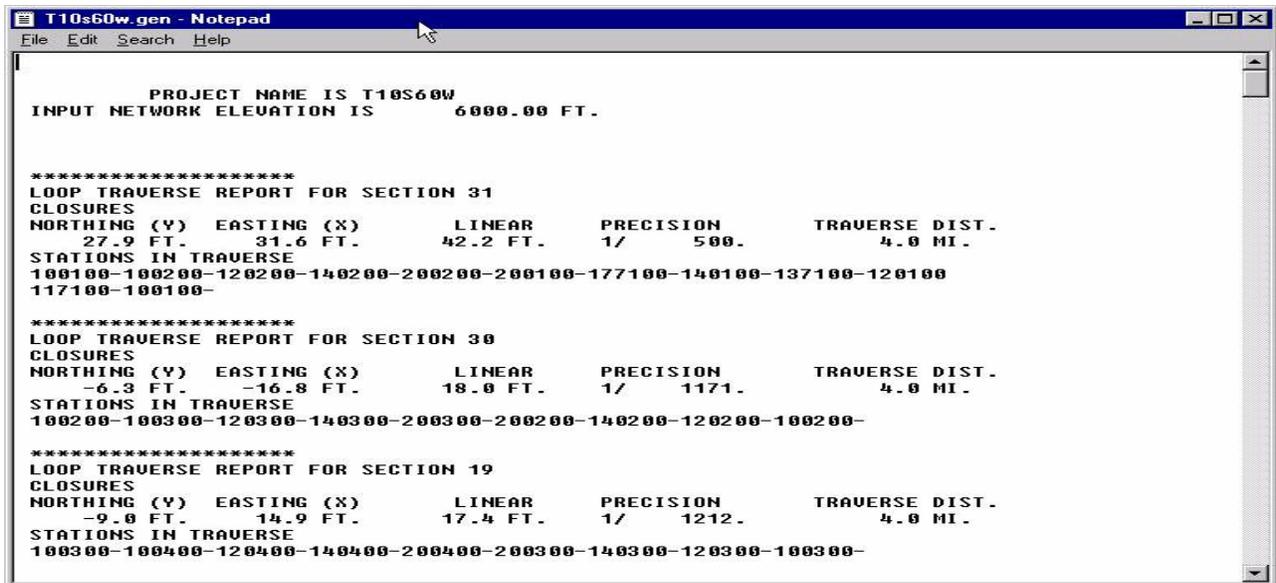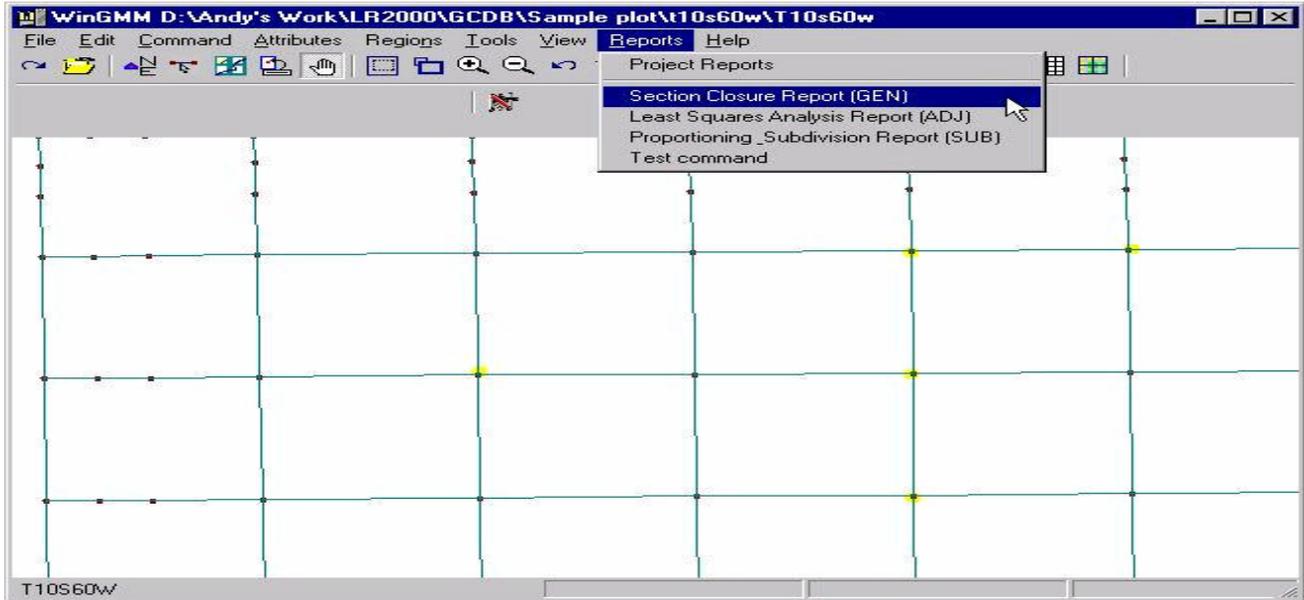
The .GEN file is your first opportunity to review how the data fits together geometrically. There are three kinds of information contained in the .GEN file that are useful in finding blunders. These sections are very useful in tracking down blunders as we expect the plats to close within the limits required at the time of survey. The first part consists of loop closures around all sections possible based on the survey data contained in .RAW and looks like this:

```
t08sr30e.gen - Notepad
File  Edit  Search  Help

********************
LOOP TRAVERSE REPORT FOR SECTION 18
CLOSURES
NORTHING (Y)  EASTING (X)      LINEAR     PRECISION      TRAVERSE DIST.
     .0 FT.      -.6 FT.        .6 FT.    1/   38225.        4.6 MI.
STATIONS IN TRAVERSE
100400-100420-100440-100460-100468-100500-110500-120500-140500-200500
200400-140400-120400-110400-100400-

********************
LOOP TRAVERSE REPORT FOR SECTION  7
CLOSURES
NORTHING (Y)  EASTING (X)      LINEAR     PRECISION      TRAVERSE DIST.
     .0 FT.      -.6 FT.        .6 FT.    1/   38229.        4.6 MI.
STATIONS IN TRAVERSE
100500-100520-100540-100560-100568-100600-110600-120600-140600-200600
200500-140500-120500-110500-100500-
```

The second portion of the report deals with information regarding point id chains and traverses. LINK traverses are abstracted .RAW information used to generate approximate coordinates of all unknowns (non-control points) for LSGMMW. These traverses will also include non-rectangular data traverses if they exist in the .RAW file and will sometimes be closed figures. As with closure around sections, closure of information fir non-retangular parcels can be extremely useful in identifying blunders in data entry. Because the purpose of these traverses is to calculate approximate coordinates once and only once for all unknown stations, the user may not see all closures they wish to evaluate contained in the .GEN file. The program CKW allows users to input specific traverses for evaluation.


```
t08sr30e.gen - Notepad
File  Edit  Search  Help

********************
LINK TRAVERSE CLOSURE REPORT
CLOSURES
NORTHING (Y)  EASTING (X)      LINEAR     PRECISION      TRAVERSE DIST.
    -.3 FT.       .0 FT.        .3 FT.    1/    3131.         .2 MI.
STATIONS IN TRAVERSE
100168-806500-100200-

********************
LINK TRAVERSE CLOSURE REPORT
CLOSURES
NORTHING (Y)  EASTING (X)      LINEAR     PRECISION      TRAVERSE DIST.
     .0 FT.      -.6 FT.        .6 FT.    1/   10843.        1.3 MI.
STATIONS IN TRAVERSE
100200-806575-110200-120200-140200-200200-

********************
```

The third type of information contained in the .GEN file is a listing of all points for which approximate coordinates were developed but for which a compass rule adjustment can not be performed. These types of information are listed in the format "STATION XXXXXX LOCATED BY DISTANCE-BEARING FROM STATION YYYYYY" and can be found by performing a search for the word LOCATE. While this type of data is most often legitimate, this can be useful in identifying blunders like incorrect data entry of point IDS in the .RAW file.

```
t08sr30e.gen - Notepad

File   Edit   Search   Help

*********************
LINK TRAVERSE CLOSURE REPORT
CLOSURES
NORTHING (Y)  EASTING (X)      LINEAR     PRECISION      TRAVERSE DIST.
     .7 FT.        .0 FT.       .7 FT.    1/    2007.            .2 MI.
STATIONS IN TRAVERSE
300400-809640-300360-
STATION 100667 LOCATED BY DISTANCE-BEARING FROM STATION 100700
STATION 100647 LOCATED BY DISTANCE-BEARING FROM STATION 100667
STATION 100627 LOCATED BY DISTANCE-BEARING FROM STATION 100647
STATION 593100 LOCATED BY DISTANCE-BEARING FROM STATION 577100
STATION 600100 LOCATED BY DISTANCE-BEARING FROM STATION 593100
STATION 693100 LOCATED BY DISTANCE-BEARING FROM STATION 600100
STATION 100100 LOCATED BY DISTANCE-BEARING FROM STATION 106100
STATION 110220 LOCATED BY DISTANCE-BEARING FROM STATION 110200
STATION 110240 LOCATED BY DISTANCE-BEARING FROM STATION 110220
STATION 806810 LOCATED BY DISTANCE-BEARING FROM STATION 110220
STATION 806920 LOCATED BY DISTANCE-BEARING FROM STATION 110240
```

LEAST SQUARE ANALYSIS REPORT (ADJ)

To run LEAST SQUARE ANALYSIS REPORT (ADJ): From the WinGMM main window menu, select
"Reports/Least Square Analysis Report (ADJ)"
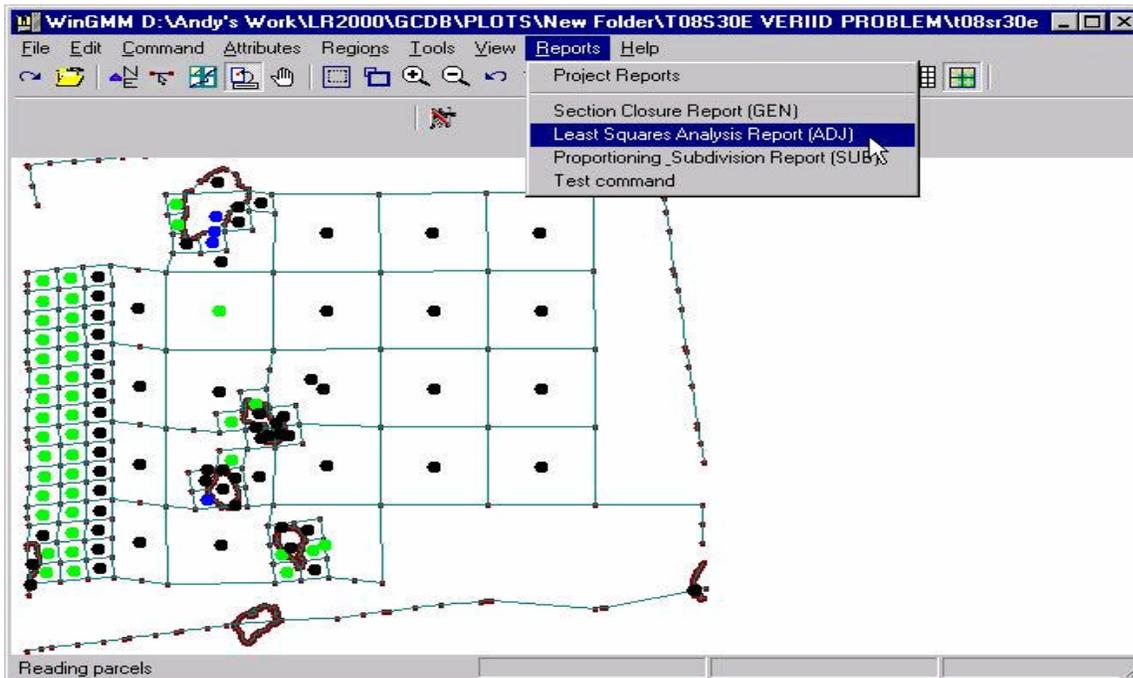
The LSGMMW program produces an .ADJ file that, among other information about the adjustment, lists
how much each measurement was adjusted (residual) and compares that value against the input estimate of
how much it should adjust (snoop number). When a measurement adjusts excessively (more than 3 times
the estimate), data is marked with asterisks to indicate a higher probability of a blunder. This file is
extremely useful in identifying potential blunders in gauging the quality of, survey and control data.
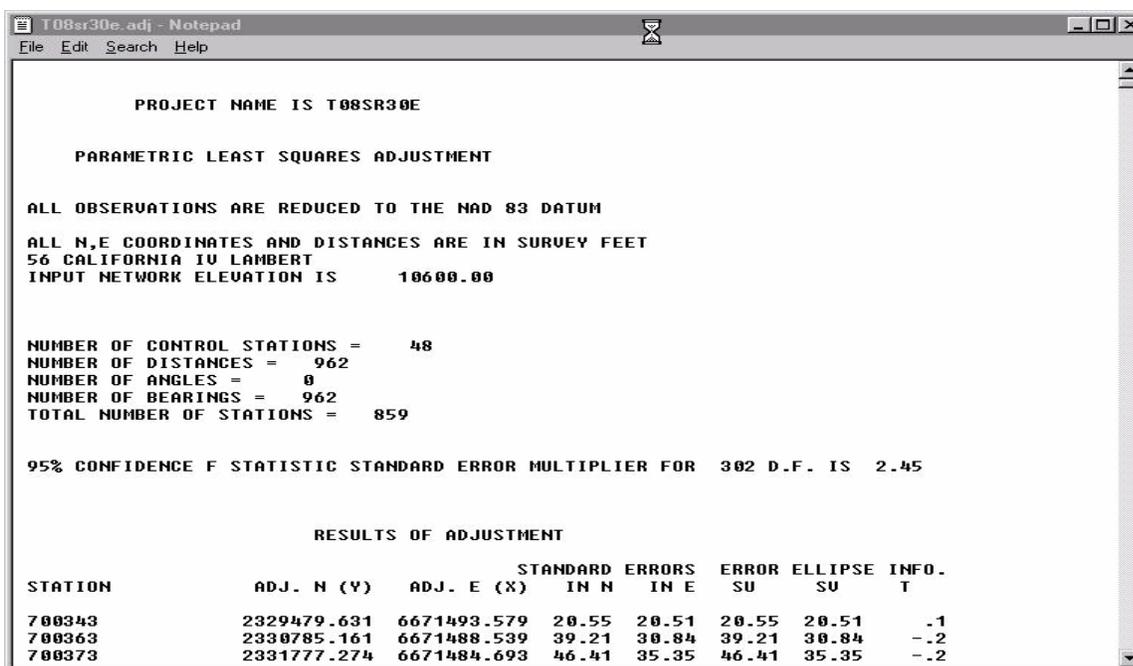
The .ADJ report is divided into four sections with examples shown below. The sections are the Control Point Coordinates, Distance, Bearing, and Standard Error of Unit Weight.

```
T01nr25e.adj - Notepad                                          _ □ ×
File  Edit  Search  Help
ALL CONTROL RESIDUALS ARE SHOWN


                   RESIDUALS IN THE OBSERVATIONS


                   CONTROL POINT COORDINATES

 STATION           NORTHING (Y)   NORTHING (Y)    EASTING (X)   EASTING (X)
                     RESIDUAL      EST. ERROR       RESIDUAL     EST. ERROR

 100100            -17.376 ( .3)    57.000        -76.838 (1.3)    57.000
 100300            -27.856 ( .7)    40.000        -29.816 ( .7)    40.000


NORTHING CONTROL RMS =    21.251 SNOOP RMS = 25.4
MAX. NORTHING RESIDUAL AT 700577        OF      55.853
EASTING CONTROL RMS =     22.134 SNOOP RMS = 47.4
MAX. EASTING RESIDUAL AT 100100         OF      76.838
```

```
T01nr25e.adj - Notepad                                          _ □ ×
File  Edit  Search  Help
ALL DISTANCES RESIDUALS ARE SHOWN

                    DISTANCES

OCCUPIED          SIGHTED         DISTANCE     RESIDUAL         EST. ERROR
STATION           STATION

100100            100140          2640.000     -36.232 ( .7)     52.900
100140            100200          2739.000     -39.061 ( .7)     54.880


DISTANCE RMS ERROR =     19.078 SNOOP RMS = 32.2
MAX. DISTANCE RESIDUAL 700657        -  700700         OF    156.465
```

```
T01nr25e.adj - Notepad                                          _ □ ×
File  Edit  Search  Help
ALL BEARING RESIDUALS ARE SHOWN

                    BEARINGS

OCCUPIED          SIGHTED         MEASUREMENT        RESIDUAL        ERROR EST.
STATION           STATION                           ( D-M-S )       ( D-M-S )

100100            100140          N  0- 0- 0E   -  0-37-22 (1.2)    0-30- 0
100140            100200          N  0- 0- 0E   -  0-38-47 (1.3)    0-30- 0
0
BEARING RESIDUAL RMS =   0-14-38 (D-M-S) SNOOP RMS =  2.7
MAX. BEARING RESIDUAL 657700          -637700          =  1- 6- 8 (D-M-S)
```

```
T01nr25e.adj - Notepad                                          _ □ ×
File  Edit  Search  Help

     STANDARD ERROR OF UNIT WEIGHT IS     55.384
       WITH   98 DEGREES OF FREEDOM

CHI SQUARED TEST ON ANALYSIS
  .748 < 55.384 <  1.208
  (LOW)         (HIGH)
DOES NOT PASS AT THE 5 % SIGNIFICANCE LEVEL
A STD. ERR. OF UNIT WGT. BETWEEN 0.5 AND 2.5 IS
CONSIDERED SUITABLE FOR MOST APPLICATIONS
```

WinGMM Screens

PROPORTIONING SUBDIVISION REPORT (SUB)

To run PROPORTIONING SUBDIVISION REPORT (SUB): From the WinGMM main window menu, select
"Reports/ Proportioning Subdivision Report
(SUB)"
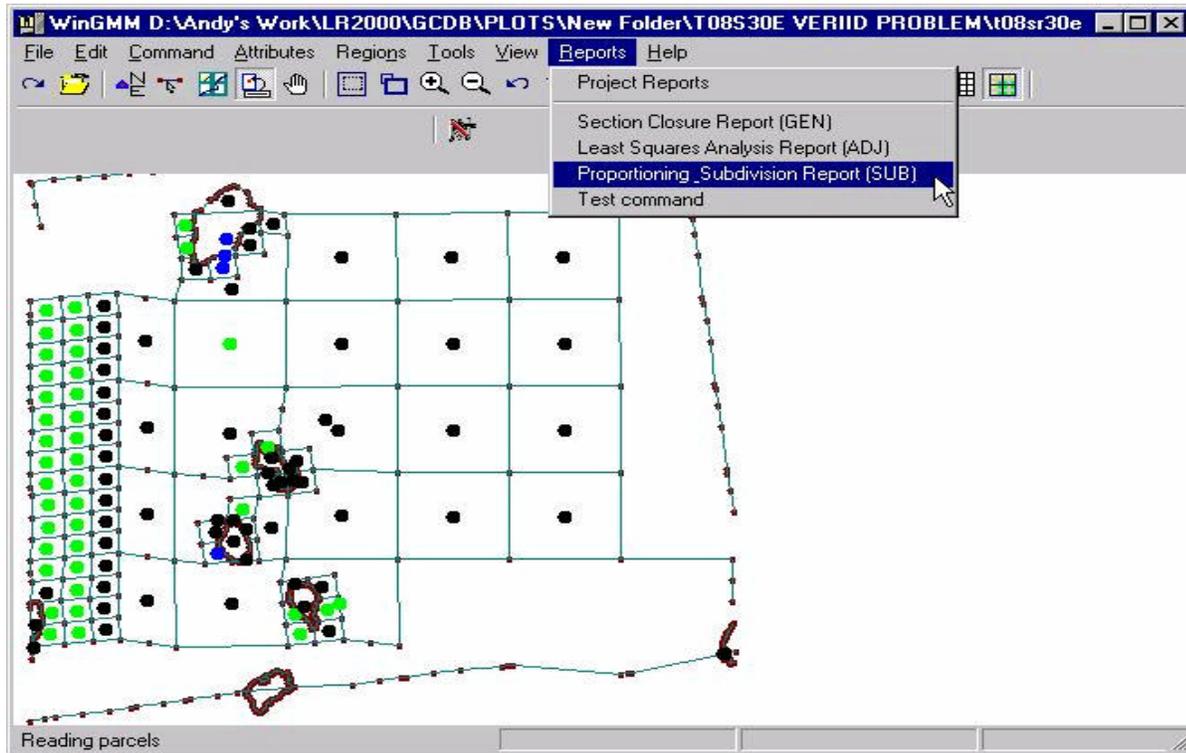
```
ELEVATION USED IN ALL PROPORTIONS IS     10600.0

ADDITIONAL COMPUTATIONS
LINE ADDED FROM CORNER 100600 TO CORNER 100627
LINE ADDED FROM CORNER 700680 TO CORNER 600680
LINE ADDED FROM CORNER 700600 TO CORNER 600600
LINE ADDED FROM CORNER 700500 TO CORNER 600500
LINE ADDED FROM CORNER 700400 TO CORNER 600400
LINE ADDED FROM CORNER 700343 TO CORNER 700300
CORNER 100010 POSITIONED BY B-B INTERSECTION FROM CORNERS
100168 AND 100100
CORNER 200010 POSITIONED BY B-B INTERSECTION FROM CORNERS
200200 AND 200100
CORNER 200070 POSITIONED BY B-B INTERSECTION FROM CORNERS
200680 AND 107100
CORNER 300070 POSITIONED BY B-B INTERSECTION FROM CORNERS
300680 AND 163100
CORNER 300010 POSITIONED BY B-B INTERSECTION FROM CORNERS
300200 AND 300100
CORNER 400070 POSITIONED BY B-B INTERSECTION FROM CORNERS
400680 AND 267100
CORNER 400010 POSITIONED BY B-B INTERSECTION FROM CORNERS
400200 AND 337100
CORNER 500070 POSITIONED BY B-B INTERSECTION FROM CORNERS
500680 AND 423100
CORNER 500010 POSITIONED BY B-B INTERSECTION FROM CORNERS
500300 AND 500100
CORNER 600010 POSITIONED BY B-B INTERSECTION FROM CORNERS
600300 AND 600100
CORNER 600070 POSITIONED BY B-B INTERSECTION FROM CORNERS
600680 AND 600600
CORNER 950101 POSITIONED BY B-B INTERSECTION FROM CORNERS
```

The SUB report contains the procedures used to subdivide the township.

COMPILATION OF TOWNSHIP DATA - PART II

PROJECW

To run **PROJECW**: From the WinGMM main window menu, select "File/Properties (PROJECW)"
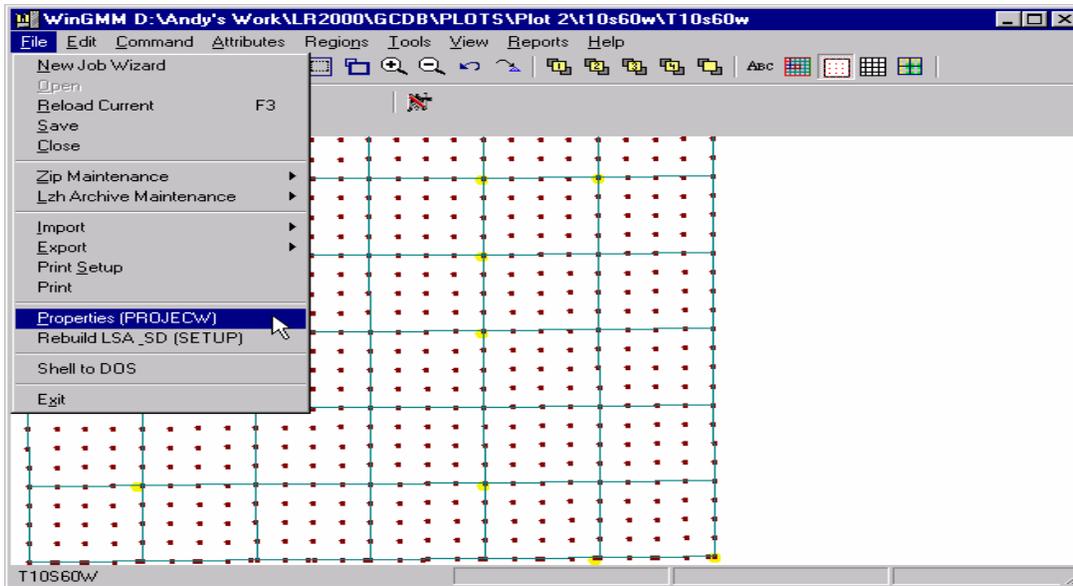
MAIN PROGRAM FEATURES

Input files: TEMP.JOB	Name of the existing project -	Item 1
Optional files:	.DEF Default values (old) -	Items 1-17
Output files: TEMP.JOB	Name of the current project -	Item 1
	.DEF Default values (new) -	Items 1-17

Purpose of PROJECW:
  To store all defaults about the current job and to provide a way to change from one job to another. Having one place for the user or the program to find the most likely answer to the most asked questions saves time. When the user desires to change any parameter for a current project, the change is made through PROJECW.

PROJECW SCREENS

```
MS
DOS  C:\WinGMM\projecw.exe                                          _ □ ×
PROJECT IS             T10S60W
(1) t10s60w                            <TOWNSHIP AND RANGE>
(2) 06                                 <PRINCIPAL MERIDIAN>
(3) COLORADO                           <STATE OR LOCAL DESIGNATION>
(4)  61 COLORADO CENTRAL LAMBERT       <STATE PLANE ZONE>
(5) PROJECT ELEVATION IS       6000.00 FT.


DEFAULT STANDARD ERROR ESTIMATES
(6) DISTANCES     .1 FT.  PLUS  1000. PPM (1/ 1000. OR     5.4 FT./ MILE)
(7) ANGLES    0- 0- 4.0 (D-M-S)
(8) BEARINGS    0- 2-  .0 (D-M-S)
(9) CONTROL NORTHING (Y)        40.000 FT.
(10) CONTROL EASTING (X)        40.000 FT.
(11) PRINT OUT ALL RESIDUALS
(12) ELEVATIONS READ FROM .LEV FILE ?        - - NO
(13) ERROR ESTIMATES READ FROM .SD FILE ?    - - YES
(14) ERROR ELLIPSES COMPUTED ?               - - YES
(15) READJUST WITH ROBUSTED ERROR ESTIMATES ? - - NO
(16) UTM ZONE = # 13
(17) DATUM IS NAD 27
(18) LINEAR UNITS ARE U.S. SURVEY FEET
INPUT THE # OF THE ITEM TO CHANGE
ENTER IF NO CHANGE IS DESIRED (QUIT)
```

Items 1 thru 13 and Items 16 thru 18 deal with data values that are utilized by the adjustment programs, but which can be changed by the user as necessary.

Items 14 thru 15 govern how much work the programs are expected to perform.

CHANGING PROJECTS - MAKING ANOTHER JOB CURRENT

```
MS
DOS  C:\WinGMM\projecw.exe                                          _ □ ×
(5) PROJECT ELEVATION IS       5000.00 FT.


DEFAULT STANDARD ERROR ESTIMATES
(6) DISTANCES    2.0 FT.  PLUS  1000. PPM (1/ 1000. OR     7.3 FT./ MILE)
(7) ANGLES    0- 0- 4.0 (D-M-S)
(8) BEARINGS    0- 2-  .0 (D-M-S)
(9) CONTROL NORTHING (Y)         .001 FT.
(10) CONTROL EASTING (X)         .001 FT.
(11) PRINT OUT ALL RESIDUALS
(12) ELEVATIONS READ FROM .LEV FILE ?        - - NO
(13) ERROR ESTIMATES READ FROM .SD FILE ?    - - YES
(14) ERROR ELLIPSES COMPUTED ?               - - YES
(15) READJUST WITH ROBUSTED ERROR ESTIMATES ? - - NO
(16) UTM ZONE = # 12
(17) DATUM IS NAD 27
(18) LINEAR UNITS ARE U.S. SURVEY FEET
INPUT THE # OF THE ITEM TO CHANGE
ENTER IF NO CHANGE IS DESIRED (QUIT)

DO YOU WANT TO CHANGE THE PROJECT (JOB) Y/N ? <N>
y
INPUT PROJECT NAME (SUCH AS 53N22E)
LIMIT TO EIGHT CHARACTERS
```

The user quits the editing features of PROJECW by accepting all 18-default choices with **[CR],** but first the user is asked:

DO YOU WANT TO CHANGE THE PROJECT (JOB) Y/N ? <N>

If the user answers [Y], then the user is prompted for the name of the new current job. The prompting returns to the main PROJECW menu with the newly named project displayed at the top of the new window.

```
C:\WinGMM\projecw.exe                                              _ □ ×
PROJECT IS               T10S60W
<1> t10s60w                          <TOWNSHIP AND RANGE>
<2> 06                               <PRINCIPAL MERIDIAN>
<3> COLORADO                         <STATE OR LOCAL DESIGNATION>
<4>  61 COLORADO CENTRAL LAMBERT     <STATE PLANE ZONE>
<5> PROJECT ELEVATION IS       6000.00 FT.


DEFAULT STANDARD ERROR ESTIMATES
<6> DISTANCES      .1 FT.  PLUS  1000. PPM <1/  1000. OR     5.4 FT./ MILE>
<7> ANGLES    0- 0- 4.0 <D-M-S>
<8> BEARINGS   0- 2-  .0 <D-M-S>
<9> CONTROL NORTHING <Y>        40.000 FT.
<10> CONTROL EASTING <X>        40.000 FT.
<11> PRINT OUT ALL RESIDUALS
<12> ELEVATIONS READ FROM .LEV FILE ?        - - NO
<13> ERROR ESTIMATES READ FROM .SD FILE ?    - - YES
<14> ERROR ELLIPSES COMPUTED ?               - - YES
<15> READJUST WITH ROBUSTED ERROR ESTIMATES ? - - NO
<16> UTM ZONE = # 13
<17> DATUM IS NAD 27
<18> LINEAR UNITS ARE U.S. SURVEY FEET
INPUT THE # OF THE ITEM TO CHANGE
ENTER IF NO CHANGE IS DESIRED <QUIT>
```

(1) T10S60W   <TOWNSHIP AND RANGE>

The limits of what can be used for the project name are restricted by what are valid filenames on the user's operating system. Since this data was first developed for use with MS-DOS the project name was limited to the length of 8 characters. To ease the exchange of files between systems, users are encouraged to continue using the same 8-character system.

(2))06   <PRINCIPAL MERIDIAN>

Choose (2) to respecify the Meridian name or the two-digit meridian code.

(3) CO   <STATE OR LOCAL DESIGNATION>

Choose (3) to respecify the State's name.

(4) 61 COLORADO CENTRAL LAMBERT   <STATE PLANE ZONE>

Choose (4) to respecify the State Plane Zone wanted.

A chart of zone numbers will appear for user to select from.

 Excerpt: 3 ARIZONA EAST
             4 ARIZONA CENTRAL
             5 ARIZONA WEST

 User would key in [4] for the Arizona Central
 zone.

(5) PROJECT ELEVATION **IS   6000.00 FT.**

Choose (5) to respecify the default elevation.

STANDARD ERROR ESTIMATE VALUES......CHOICES(6) - (10)

```
C:\WinGMM\projecw.exe                                              _ □ ×
PROJECT IS              T10S60W
(1) t10s60w                              <TOWNSHIP AND RANGE>
(2) 06                                   <PRINCIPAL MERIDIAN>
(3) COLORADO                             <STATE OR LOCAL DESIGNATION>
(4)  61 COLORADO CENTRAL LAMBERT         <STATE PLANE ZONE>
(5) PROJECT ELEVATION IS       6000.00 FT.


DEFAULT STANDARD ERROR ESTIMATES
(6) DISTANCES     .1 FT.  PLUS  1000. PPM (1/ 1000. OR      5.4 FT./ MILE)
(7) ANGLES   0- 0- 4.0 (D-M-S)
(8) BEARINGS   0- 2-  .0 (D-M-S)
(9) CONTROL NORTHING (Y)           40.000 FT.
(10) CONTROL EASTING (X)           40.000 FT.
(11) PRINT OUT ALL RESIDUALS
(12) ELEVATIONS READ FROM .LEV FILE ?         - - NO
(13) ERROR ESTIMATES READ FROM .SD FILE ?     - - YES
(14) ERROR ELLIPSES COMPUTED ?                - - YES
(15) READJUST WITH ROBUSTED ERROR ESTIMATES ? - - NO
(16) UTM ZONE = # 13
(17) DATUM IS NAD 27
(18) LINEAR UNITS ARE U.S. SURVEY FEET
INPUT THE # OF THE ITEM TO CHANGE
ENTER IF NO CHANGE IS DESIRED (QUIT)
```

(6) CHANGING ERROR ESTIMATES FOR DISTANCES

(6) DISTANCES 1.0 FT PLUS 1700 PPM (1/588 OR 10 FT/MI.)
INPUT DISTANCE ERROR ESTIMATE CONSTANT IN FT.
(ENTER IF NO CHANGE)
.5
INPUT DISTANCE ERROR PPM OR 1/X FORM (ENTER IF NO CHANGE)
1/8000
(6) DISTANCES   .5 FT. PLUS   125. PPM (1/ 8000. OR   1.2 FT./ MILE)

(7) CHANGING ERROR ESTIMATES FOR ANGLES

(7) ANGLES   0- 0- 4.0 (D-M-S)

INPUT ANGLE ERROR ESTIMATE IN DD.MMSSSS FORMAT
(ENTER FOR NO CHANGE)
0.00001
(7) ANGLES   0- 0- .1 (D-M-S)

(8) CHANGING ERROR ESTIMATES FOR BEARINGS

(8) BEARINGS 0- 4- .0 (D-M-S)
INPUT BEARING ERROR ESTIMATE IN DD.MMSSSS FORMAT

PROJECW

(ENTER FOR NO CHANGE)
.004
(8) BEARINGS   0- 0-40.0 (D-M-S)

(9) CHANGING ERROR ESTIMATES FOR CONTROL (N**)**

(9) CONTROL NORTHING (Y)   20.000 FT.

INPUT CONTROL NORTHING (Y) ERROR ESTIMATE IN FT.
(ENTER FOR NO CHANGE)
30
(9) CONTROL NORTHING (Y)   30.000 FT.

(10) CHANGING ERROR ESTIMATES FOR CONTROL (E)

(10) CONTROL EASTING (X)   20.000 FT.

INPUT CONTROL EASTING (X) ERROR ESTIMATE IN FT.
(ENTER FOR NO CHANGE)
31
(10) CONTROL EASTING (X)   31.000 FT.

STANDARD DEFAULT DECISIONS.......CHOICES(11) - (17)

```
C:\WinGMM\projecw.exe                                              _ □ ×
PROJECT IS          T10S60W
(1) t10s60w                          <TOWNSHIP AND RANGE>
(2) 06                               <PRINCIPAL MERIDIAN>
(3) COLORADO                         <STATE OR LOCAL DESIGNATION>
(4)  61 COLORADO CENTRAL LAMBERT     <STATE PLANE ZONE>
(5) PROJECT ELEVATION IS       6000.00 FT.


DEFAULT STANDARD ERROR ESTIMATES
(6) DISTANCES     .1 FT.  PLUS  1000. PPM (1/  1000. OR      5.4 FT./ MILE)
(7) ANGLES    0- 0- 4.0 (D-M-S)
(8) BEARINGS   0- 2-  .0 (D-M-S)
(9) CONTROL NORTHING (Y)       40.000 FT.
(10) CONTROL EASTING (X)       40.000 FT.
(11) PRINT OUT ALL RESIDUALS
(12) ELEVATIONS READ FROM .LEV FILE ?      - - NO
(13) ERROR ESTIMATES READ FROM .SD FILE ?  - - YES
(14) ERROR ELLIPSES COMPUTED ?             - - YES
(15) READJUST WITH ROBUSTED ERROR ESTIMATES ? - - NO
(16) UTM ZONE = # 13
(17) DATUM IS NAD 27
(18) LINEAR UNITS ARE U.S. SURVEY FEET
INPUT THE # OF THE ITEM TO CHANGE
ENTER IF NO CHANGE IS DESIRED (QUIT)
```

(11) PRINT OUT ALL RESIDUALS
 Choosing this option prompts the user to "Input New Residual Printout Limit".

PROJECW

(12) ELEVATIONS READ FROM .LEV FILE   **- - NO**

If a .LEV file exists and the user decides to use its elevation data in the
adjustment, then choosing (12) will toggle the NO to a YES. Choosing (12) will
toggle the YES to a NO.

(13) ERROR ESTIMATES READ FROM .SD FILE - YES

If the user decides to use only the default error estimates in the .DEF file, then
choosing (13) will toggle the YES to a NO. The .SD file is then not required to
exist, however any error estimates from the .SID file or custom editing of the .SD
file will not be available to govern the network adjustment. Choosing (13) will
toggle the NO to a YES.

(14) ERROR ELLIPSES COMPUTED

If a user wants to review error ellipse values or view ellipses graphically, then
choosing (14) will toggle the NO to a YES. Choosing (14) will toggle the YES
to a NO, and calculations will speed up.

(15) READJUST WITH ROBUSTED ERROR ESTIMATES

If the user decides to use robusting to assist in analyzing the data and seek
possible blunders, then choosing (15) will toggle the NO to a YES. YES will
result in an extra prompt at the end of every adjustment. See the chapters on
LSMINW and LSGMMW. Choosing (15) will also toggle the YES to a NO.

(16) UTM ZONE = # 12

If the user wishes to convert Lat/Longs into a user-specified UTM coordinate
zone, then choose (16) and key in the new zone number.

(17) DATUM IS NAD 27

Toggle between NAD 27 and NAD 83. When NAD 27 is selected (17) is
automatically set to U.S. Survey feet. When NAD 83 is selected then other units
may be selected in (17).

(18) LINEAR UNITS ARE U.S. SURVEY FEET

LINEAR UNITS ARE
(1) METERS
(2) U.S. SURVEY FEET
(3) INTERNATIONAL FEET
PICK A # <2>

The LINEAR UNITS submenu allows for changing the default units, but is only
enabled when the DATUM IS NAD 83 in (16).

PROJECW

INRAWW

To run INRAWW: From the WinGMM main window menu, select "Edit/Input/Edit Record data (INRAWW)"
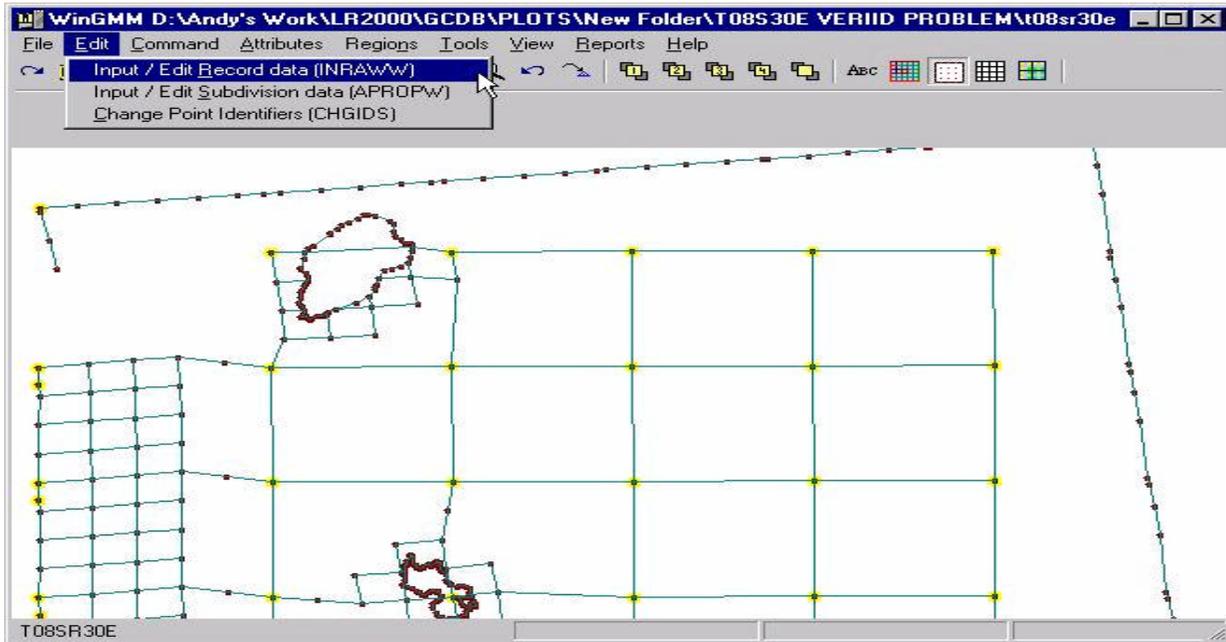
MAIN PROGRAM FEATURES

Purpose of INRAWW: INRAWW is used to add, change or delete data.

Required files:	.DEF	Default values used for file headers, error est.
Optional files:	.CON	Option in INRAWW to import control from .CON
	.RAW	Data existing in .RAW can be edited in INRAWW
	.SID	Error estimates can be changed from within INRAWW
Output files:	.RAW	The current distances, bearings, SIDs
	.SID	Error estimates by survey used to populate .SD
	.LSA	Distances, bearings, coords. (error ellipses opt.)
	.SD	Distances, bearings, coords. w/ error estimates

We assume that files .SID and .DEF already contain values that are correct to our best knowledge. Files such as .CON, .LSA, .SD, and .RAW need not exist at this point.

Note: Although the above files may not have been created at this point, GEN, a subprogram of INRAWW, will not generate coordinates without at least one control point that is connected to the raw data.

MAIN MENU SCREEN FOR INRAWW

    AS THIS SUPPLEMENTS THE UTILITIES.
    USING GCDB NUMBERING ENHANCES THE INPUT PROCESS.

    DEFAULT DISTANCE ENTRY ARE IN CHAINS.
    ALL BEARINGS ARE INPUT AS MEAN GEODETIC.

WARNING - NO SID IS DEFINED

PROJECT NAME IS T??NR??E

OF SIDS IS   ?
        ?? CONTROL POINTS READ FROM .LSA FILE
        ?? LINES READ FROM OF RECORD INFORMATION FROM .RAW FILE
(1) RECORD DATA MAINTENANCE
(2) RETURN TO INPUT OF CARDINAL LINES
(3) IMPORT TOWNSHIP BOUNDARIES FROM OTHER .RAW FILES
(4) CONTROL MAINTENANCE
(5) SID MAINTENANCE
(6) CHANGE DEFAULT ERROR ESTIMATES
(7) CHANGE DISTANCE UNITS
(8) QUIT
PICK A # <8>

HINT: If .RAW files exist for adjoining townships, that data should be imported prior to keying in plat data. Press [Q] now to return to the main INRAWW menu, then choose (3) IMPORT TOWNSHIP BOUNDARIES FROM OTHER .RAW FILES.

RAW files must be in current directory or full DOS path name to get record data.

HINT: Press [S] to define an Active SID at this point will save rework time later.

STARTING INRAWW WITHOUT A .RAW FILE:

2 [CR] (RETURN TO INPUT OF CARDINAL LINES)

Current Active SID is :   NONE
NEXT STATIONS LAST THREE DIGITS WILL BE 140
ENTER TO ACCEPT OR INPUT ACTUAL THREE DIGIT ID
FROM STATION IS 100100
INPUT AN F (FROM) TO CHANGE IT (OR Q TO QUIT)
INPUT THE DISTANCE INCREMENT FROM 100100 IN CHAINS
<40>

Hint: Anytime the "Current Active SID" is NONE, then specify a SID #. Key **[S]** as a response to any prompt for plat data. Refer below to (5) SID MAINTENANCE, (4) SWITCH SIDS for a description of the process.

If there are no SID #s yet for the current plat data, WinGMM will still work. However, temporarily assigning a bogus SID for each survey will greatly reduce the amount of rework and will increase the ease of operation. Refer to (5) SID MAINTENANCE, (2) ADD SIDS and (3) EDIT SIDS.

The data entry process from this point is described in detail below in (2) RETURN TO INPUT OF CARDINAL LINES.

(1) RECORD DATA MAINTENANCE

```
AS THIS SUPPLEMENTS THE UTILITIES.
USING GCDB NUMBERING ENHANCES  THE INPUT PROCESS.

DEFAULT DISTANCE ENTRY UNITS ARE IN CHAINS.
ALL BEARINGS ARE INPUT AS MEAN GEODETIC.

YOU NEED TO PRESS S TO CHANGE A SID.

WARNING - NO SID IS DEFINED

PROJECT NAME IS T08SR30E

# OF SIDS IS   9
   48 CONTROL POINTS READ FROM .LSA FILE
  962 LINES OF RECORD INFORMATION READ FROM .RAW FILE
<1> RECORD DATA MAINTENANCE
<2> RETURN TO INPUT OF CARDINAL LINES
<3> IMPORT TOWNSHIP BOUNDARIES FROM OTHER .RAW FILES
<4> CONTROL MAINTENANCE
<5> SID MAINTENANCE
<6> CHANGE DEFAULT ERROR ESTIMATES
<7> CHANGE DISTANCE UNITS
<8> QUIT
PICK A # <8>
```

Record data refers to survey boundary data

*NOTE: The prompting cycle described here applies to all functions of LISTING RECORD DATA, namely **INRAWW's**:*

(3) EDIT REC. INF.
(2) EDIT BLOCK

(4) DEL. REC. INF.
(2) DEL. REC.

and in SD's main menu choices:
(1) - (4)

1 [CR]

SUB-MENU FOR RECORD DATA MAINTENANCE

(1) LIST RECORD INFORMATION
(2) ADD RECORD INFORMATION
(3) EDIT RECORD INFORMATION
(4) DELETE RECORD INFORMATION
(5) REORDER RECORD INFORMATION
(6) QUIT RECORD DATA MAINTENANCE
PICK A # <6>

(1) RECORD DATA MAINTENANCE
   (1) LIST RECORD INFORMATION

Choosing to list record information from this menu choice or from other prompts in **INRAWW** results in:

TOTAL NUMBER OF RECORDS =   180
INPUT BEGINNING RECORD # OF LIST OR LINE # (ENTER IF FINISHED)

1 [CR]

INPUT ENDING RECORD # OF LIST (ENTER IF FINISHED)

9 [CR] (Selected Records # 1-9)

```
REC # FROM   TO  DIST. (CH) ERR. (FT) BEARING  ERR.   SID
  1 100100 100140   40.000   5.488 N  0- 0- 0 E  0- 4- 0 193427
  2 100140 100200   40.000   5.488 N  0- 0- 0 E  0- 4- 0 193427
  3 100200 100240   40.000   5.488 N  0- 0- 0 E  0- 4- 0 193427
  4 100240 100300   40.000   5.488 N  0- 0- 0 E  0- 4- 0 193427
  5 100300 100340   40.000   5.488 N  0- 0- 0 E  0- 4- 0 193427
  6 100340 100400   40.000   5.488 N  0- 0- 0 E  0- 4- 0 193427
  7 100400 100440   40.000   5.488 N  0- 0- 0 E  0- 4- 0 193427
  8 100440 100500   40.000   5.488 N  0- 0- 0 E  0- 4- 0 193427
  9 100500 100540   40.000   5.488 N  0- 0- 0 E  0- 4- 0 193427
```
                                                          INRAWW

The first 9 data lines in what will be the .RAW file are listed by choosing RECORD #s 1 - 9, as above.

```
Convntl:  Fieldnote:
              62.91
  12.78
              50.13
  22.56

              27.57
  14.01
              13.56
  13.56
```

(1)RECORD DATA MAINTENANCE
          (2) ADD RECORD INFORMATION

The user must choose between two ways in which **INRAWW** will react to distance values:

DO YOU WANT
(1) CONVENTIONAL RECORD INPUT OR
(2) FIELD NOTE TYPE INPUT
PICK A # <1>

"Conventional" means each distance is between adjacent corners.

"Field note type" means each distance represents an accumulation of distances from the last angle point. Record distances from field notes and on Special Survey plats and notes can be entered in directly.

(1) RECORD DATA MAINTENANCE
  (2) ADD RECORD INFORMATION
    (1) CONVENTIONAL RECORD INPUT

INPUT FROM STATION (ENTER IF FINISHED)

400300 [CR]

FROM STATION IS 400300
INPUT AN F (FROM) TO CHANGE IT (OR Q TO QUIT)
INPUT THE DISTANCE INCREMENT FROM 400300 IN CHAINS
<40   >

The distance, bearing defaults and prompting react identical to input of cardinal lines.

The value of the computed "To" ID depends on whether the "From" ID value is within the rectangular range (095095 - 705705).

If the user is traversing along a rectangular survey line, then the value of the default "To" station will observe the correct conventions; increments are based generally on chains distance, no IDS like 500487 are automatically generated.

If the user is in the numbering for Special Surveys, then the default increment is 10. The default increment is easy to override: The user keys in the ID value that is desired - the increment from the last ID becomes the new increment.

Example: From ID is 911010. User wants increment of 4. **INRAWW** provides default of <911020>. User keys in 911014. The next default ID after 911014 is <911018>, regardless of distance of line.

```
                911022


9 1 1 0 1 0  911018
                        911010


                911014
```

INRAWW

(1) RECORD DATA MAINTENANCE
   (2) ADD RECORD INFORMATION
    (2) FIELD NOTE TYPE INPUT

Every distance in this mode of input is assumed to be a distance from the last angle point. If the current distance entered is less than the previous distance, then a new line is assumed to have begun.

INCREMENT (1) FIRST THREE DIGITS
    OR (2) LAST THREE DIGITS
PICK A # <2>

(1) is intended for N-ly lines, where
(2) works for W-ly lines and Special surveys.

1 [CR]

FIELD NOTE ENTRY MODE
FROM STATION IS 600557
INPUT AN F (FROM) TO CHANGE IT (OR Q TO QUIT)
INPUT THE DISTANCE INCREMENT FROM 600600 IN CHAINS
<50.000 >

In this example the new "From" ID, 600557, had an accumulated distance of 25 from 600600.

29 [CR]

The new "To" ID, 600557, has an accumulated distance of 29 from 600600.

FOR BEARING FROM 600557
INPUT QUADRANT # & BEARING (DD.MMSSSS) OR N,S,E,W FOR CARDINAL DIRECTION
<4 89.1500>

489 [CR]   Space between quadrant and degrees is not required
  Or
4 89 [CR]

Current Active SID is :   NONE
NEXT STATIONS FIRST THREE DIGITS WILL BE   540
ENTER TO ACCEPT OR INPUT ACTUAL ID

551 [CR]

600557 540551   4.000   N 89 0   0. W

The calculated distance of each line segment is displayed. The default distance is the sum of the last course added to the accumulated distance, in this example the next default would be <33> (29 + 4)

1) RECORD DATA MAINTENANCE
  (3) EDIT RECORD INFORMATION

Decision point:

DO YOU WANT
  (1) INDIVIDUAL EDIT
OR (2) BLOCK(MULTIPLE RECORD) EDIT
PICK A # <2>

   Regardless of choice, the user is given the option of listing the record information, identical prompting process as in

(1) RECORD DATA MAINTENANCE, above.
  (1) LIST RECORD INFORMATION

   Choosing to list record information from this menu choice or from other prompts in **INRAWW** results in:

TOTAL NUMBER OF RECORDS =   180
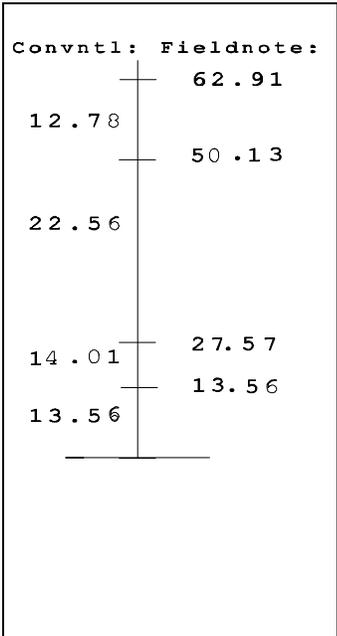INPUT BEGINNING RECORD # OF LIST OR LINE # (ENTER IF FINISHED)

INPUT ENDING RECORD # OF LIST (ENTER IF FINISHED)

(1) RECORD DATA MAINTENANCE
  (3) EDIT RECORD INFORMATION
   (1) INDIVIDUAL EDIT

INPUT RECORD # FOR CHANGE (ENTER IF FINISHED)

57 [CR]

(1) OCCUPIED STATION = 901060
(2) SIGHTED STATION = 901090
(3) BEARING = N 33- 0- .00 E
(4) DISTANCE =   44.000
(5) BEARING ERROR ESTIMATE   0- 0-30
(6) DISTANCE ERROR ESTIMATE   .017 FT.
(7) SID = 193427
(8) QUIT
SELECT A # <8>

3 [CR]

INRAWW traps invalid Quadrant entry, re-prompts for data:

INPUT QUADRANT # & BEARING (DD.MMSSSS) OR N,S,E,W FOR CARDINAL DIRECTION

5 33.44 [CR]

INPUT QUADRANT # & BEARING (DD.MMSSSS) OR N,S,E,W FOR CARDINAL DIRECTION

1 33.44 [CR]

   ... and next, to fix the distance:

<table>
<tr>
<td>

INRAWW error on trapping invalid Distance entry:

</td>
<td>

4 [CR]

INPUT THE DISTANCE INCREMENT FROM 901060 IN CHAINS
<44.000>

-33 [CR]

*** IMPROPER DISTANCE ENTRY - TRY AGAIN ***

INPUT THE DISTANCE INCREMENT FROM 901060 IN CHAINS
<44.000>

44.01 [CR]

Corrected Record # 57

(1) OCCUPIED STATION = 901060
(2) SIGHTED STATION = 901090
(3) BEARING = **N 33-44-   .00 E**
(4) DISTANCE =   **44.010**
(5) BEARING ERROR ESTIMATE   0- 0-30
(6) DISTANCE ERROR ESTIMATE   .017 FT.
(7) SID = 193427
(8) QUIT
SELECT A # <8>

    The user is returned to the 1 - 8 choice menu after each data entry until <8>
    QUIT is chosen.

</td>
</tr>
<tr>
<td>

Note: the line # can be used only for section lines, centerline of sections, special surveys.

</td>
<td>

(1) RECORD DATA MAINTENANCE
  (3) EDIT RECORD INFORMATION
    (2) BLOCK (MULTIPLE RECORD) EDIT

In a block edit, all values in a range of entries can be changed globally, based on
the position in the data file (RECORD # OF LIST).

The selection of which records are to change has the same prompting sequence
as in **(1) LIST RECORD INFORMATION**, above.

The prompting method for changing the data values is identical with
INDIVIDUAL EDIT, immediately above.

</td>
</tr>
</table>

INRAWW

(1) RECORD DATA MAINTENANCE
  (4) DELETE RECORD INFORMATION

    This feature allows the user to delete whole records from the .RAW file.

DO YOU WANT TO
(1) DELETE BY CORNERID OR
(2) DELETE BY RECORD #
PICK A # <2>

(1) RECORD DATA MAINTENANCE
   (4) DELETE RECORD INFORMATION
     (1) DELETE BY STATION ID

INPUT FROM STATION (ENTER IF FINISHED)

903010 [CR]

INPUT TO STATION (ENTER IF FINISHED)

903012 [CR]

INPUT FROM STATION (ENTER IF FINISHED)

    ... and the prompting cycle continues

(1) RECORD DATA MAINTENANCE
   (4) DELETE RECORD INFORMATION
     <2> DELETE BY RECORD #

    This choice is followed by:

DO YOU WANT TO LIST RECORD DATA (Y/N)? <Y>

    Refer to **(1) LIST RECORD INFORMATION**, above, for a description of the listing process.

DO YOU WANT TO LIST RECORD DATA (Y/N)? <Y>
N [CR]
INPUT MINIMUM RECORD # TO DELETE (ENTER IF FINISHED)
56 [CR]
INPUT MAXIMUM RECORD # TO DELETE (ENTER IF FINISHED)
60 [CR]
RECORD #   56 TO   60 DELETED

DO YOU WANT TO LIST RECORD DATA (Y/N)? <Y>

(1) RECORD DATA MAINTENANCE
   (5) REORDER RECORD DATA

INRAWW
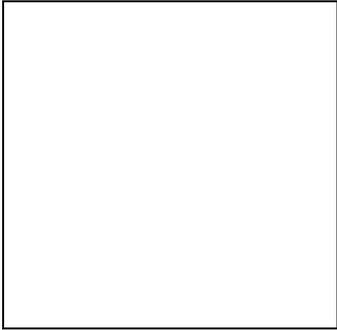
This choice simply changes the order of lines in the .RAW file to coincide with the accepted format. There is no prompting.

.RAW begins at the southern most point on the west boundary (100xxx) line continues E-ly to the east boundary (700xxx) line, then to the eastern most point on the south boundary (xxx100)line and continues N-ly to the north boundary (xxx700)line.

RETURN TO INPUT OF CARDINAL LINES

ADD RECTANGULAR DATA

The prompt cycle:

<From what ID point>
Distance
Quadrant Bearing
To what ID point

Undisplayed choices:

F =change From ID
S =switch SID #
U =UNDO entries
Q =QUIT entering

Type a "S" and USER will go to (5)SID MAINT.
(6)SWITCH SIDS
to select a new SID

Online arithmetic:

Valid formats to respond to the distance prompt are:

79.93 / 2 [CR]
40.74-2.35 [CR]
*20.02*3 [CR]*
1.34+15.47 [CR]

Invalid:
80.12/2+15.47 [CR]

Convert unit online:
C=convert to   Chains
F=convert to Feet
M=convert to   Meters

Example:
5280f [CR]
is same as 80 [CR]   or as
5280/66 [CR]


```
C:\WinGMM\inraww.exe
AS THIS SUPPLEMENTS THE UTILITIES.
USING GCDB NUMBERING ENHANCES  THE INPUT PROCESS.

DEFAULT DISTANCE ENTRY UNITS ARE IN CHAINS.
ALL BEARINGS ARE INPUT AS MEAN GEODETIC.

YOU NEED TO PRESS S TO CHANGE A SID.

WARNING - NO SID IS DEFINED

PROJECT NAME IS T08SR30E

# OF SIDS IS   9
 48 CONTROL POINTS READ FROM .LSA FILE
 962 LINES OF RECORD INFORMATION READ FROM .RAW FILE
<1> RECORD DATA MAINTENANCE
<2> RETURN TO INPUT OF CARDINAL LINES
<3> IMPORT TOWNSHIP BOUNDARIES FROM OTHER .RAW FILES
<4> CONTROL MAINTENANCE
<5> SID MAINTENANCE
<6> CHANGE DEFAULT ERROR ESTIMATES
<7> CHANGE DISTANCE UNITS
<8> QUIT
PICK A # <8>
```

(2) RETURN TO INPUT OF CARDINAL LINES

Some defaults need to be set, so the user is prompted:

INPUT SIX DIGIT ID OF STARTING FROM CORNER (ENTER IF NONE)

700100 [CR]

INPUT THE DIRECTION INPUT WILL BE TOWARDS - N,S,E, OR W

N [CR]

FROM CORNER IS 700100
INPUT AN F (FROM) TO CHANGE IT (OR Q TO QUIT)
INPUT THE DISTANCE INCREMENT FROM 100300 IN CHAINS
<40   >

To override the default "FROM STATION IS ......", key [F], then the correct ID. Refer to **OVERRIDING THE DEFAULT ORDER OF ENTERING SECTION LINES**, below.

To override the default distance, key in correct dist.
   Example: **20.02 [CR]**

To calculate a distance, key in the algebraic data as described at left under Online arithmetic.
   Example: **80.08/4 [CR]** is equivalent to 20.02

To specify the distance units just for this entry, key in the plat value followed by **C**,**F** or **M**. **INRAWW** will perform the conversion.
   Example: **1321.32f [CR]** is same as **20.02 [CR]**

INRAWW

Then you are prompted for the quadrant and bearing:

FOR BEARING FROM 700100
INPUT QUADRANT # & BEARING (DD.MMSSSS) OR N,S,E,W FOR
CARDINAL DIRECTION
<N>
4.03 [CR]

The format is more accurately described as QDD.MMSSSS Another valid format
is Q DD.MMSSSS.

  Example: **189.59 [CR]** is equivalent to N 89 59'00"   E
  Example: **4 .03 [CR]** is equivalent to N 0 03'00"   W
  Example: **4.03 [CR]** is equivalent to N 0 03'00"   W

The "N,S,E,W FOR CARDINAL DIRECTION" refers to due North, South, East
and West, except "**S**" activates the feature for changing SIDs. The convention
accepted by the GCDB project is that lines are to be entered in a N-ly or W-ly
direction. However, if a due South bearing is warranted, the entry **2 0 [CR]** will
be identical as due South.

The user is prompted for the ID of the ending point:

Current Active SID is: 193427
NEXT CORNERS LAST THREE DIGITS WILL BE 120
ENTER TO ACCEPT OR INPUT ACTUAL THREE DIGIT ID

121 [CR]

This completes the input cycle. The following message is displayed for your
verification

700100 700121   20.020   N 0 3   0. W 193427

If the next line segment is the same as the previous, you may accept all the
defaults. (There are 3 [CR]s)

FROM STATION IS 700121
INPUT AN F (FROM) TO CHANGE IT (OR Q TO QUIT)
INPUT THE DISTANCE INCREMENT FROM 700121 IN CHAINS
<20.02>
[CR]
FOR BEARING FROM 700121
INPUT QUADRANT # & BEARING (DD.MMSSSS) OR N,S,E,W FOR
CARDINAL DIRECTION
<40300>
[CR]
Current Active SID is :   193427
NEXT CORNERS LAST THREE DIGITS WILL BE 140
ENTER TO ACCEPT OR INPUT ACTUAL THREE DIGIT ID

Error trapping: preventing

[CR]
700121 700140   20.020   N 0 3   0. W 193427
FROM STATION IS 700140

This prompting continues until **[Q]** is chosen or the sectional lines are
finished. See Default Order of Entering Section Lines, below.

Below is an example of what happens if the user tries to put in record data for
a line that has already been entered:

WARNING - INPUT RECORD LINE ALREADY INPUT AS
RECORD #   52 400400 400440   40.000 N 0 0   0. E
YOU HAVE JUST INPUT
RECORD #   62 400400 400440   40.000 N 0 2   0. E

DO YOU WANT TO
(1) DELETE OLD RECORD
(2) DELETE NEW (JUST INPUT) RECORD
PICK A # <1>

If (1) DELETE OLD RECORD is chosen, the new entry overwrites the old
record. In the above example, the information from Record #62 would now
appear instead in Record #52.

TIME SAVER:
- ORIGINAL SURVEYS

ENTRY OF SEVERAL MILES AT A TIME

When a N-S line or an E-W
line has several miles of
equal brg., distance and SID,
use the feature to the right.

Instead of accepting the default "Next Station" ID, put in an ID for the end of the
line segments having the same bearing and/or distance. A list of choices appears.
The default choice **(3)** is to automatically enter all intervening lines with identical
brg./dists. In the below example, line data entered for 100140-100500 is stamped
on all lines until 100640 is reached.

This works good for up to the
1/4 sec. corner at 5.5 miles;
xxx100-xxx640,
then you will be starting the
closing .5 mile.

NEXT STATIONS LAST THREE DIGITS WILL BE 500
ENTER TO ACCEPT OR INPUT ACTUAL THREE DIGIT ID

640 [CR]

(1) PROMPT DISTANCE ONLY
(2) PROMPT BEARING ONLY
(3) AUTOMATIC (NO PROMPTS)
(4) PROMPT DISTANCE AND BEARING
SELECT A # <3>

[CR] SELECTED DEFAULT (3) AUTOMATIC (NO PROMPTS)

100440 100500   40.000   N 0 0   0. E
100500 100540   40.000   N 0 0   0. E
100540 100600   40.000   N 0 0   0. E
100600 100640   40.000   N 0 0   0. E
FROM STATION IS 100640

If (1) is selected, user is
prompted for "distance"
only.

If (1) PROMPT DISTANCE ONLY

300100 300140   40.000   N 0 0   0. E

INPUT THE DISTANCE INCREMENT FROM 300140 IN CHAINS
<40>

30 (CR)

300140 300200   30.000   N 0 0   0. E

If (2) is selected, user is prompted for "bearing" only. Useful on Dependent Resurveys

INPUT THE DISTANCE INCREMENT FROM 300200 IN CHAINS
<30>

If (2) PROMPT BEARING ONLY

INPUT QUADRANT # & BEARING (QDD.MMSSSS) 0R N,S,E,W FOR CARDINAL DIRECTION
<N>

4.02 (CR) (Prompts for BEARING only)
300140 300200   30.000   N 0 02   0. W

Default Order of Entering Section Lines:

OVERRIDING THE DEFAULT ORDER OF ENTERING SECTION LINES

Although WinGMM offers a standard order in which sectional lines can be input, the user can start from any point. If the user overrides the default "From" ID, **[F]**, then WinGMM will prompt in one of two fashions:

If there is an established line that is being run, the user will be prompted for a 3-digit ID and input will commence along that same line. However if the user wants to enter on another line, then pressing [Q] will return to the **INRAWW** main menu where (5) RETURN TO INPUT OF CARDINAL LINES will then prompt in another fashion, described next:

WinGMM assumes you want to start running N from 100100.

If **INRAWW** cannot assume which line you are running, it will prompt for a 6-digit ID:

Then N from 200100, and so on, Then W from 700100, then W from 700200 until done.

INPUT SIX DIGIT ID OF STARTING FROM STATION (ENTER IF NONE)

Then to support the calculations for the next ID:

INPUT THE DIRECTION INPUT WILL BE TOWARDS - N,S,E, OR W

This is not to be confused with Due North or West, but N-ly direction or W-ly direction. Note that keying S here <u>will</u> result in a S-ly direction; SID changing is not enabled for this prompt only.

IMPORT TOWNSHIP. BOUNDARIES. FROM OTHER .RAW FILES

Importing brgs. and distances from adjacent townships:

Example: If the IDS on the South boundary of the township to the North were 403100 and 400100, then answering the offset prompt with -3 would bring those points into the current project as 400700 and 397700.
If the prompt for the smallest old ID is answered, then the user is prompted for the largest old ID.
The user is returned to IMPORT TOWNSHIP. BOUNDARY menu:

Importing coordinates from adjacent townships:

A .PGC file is required for the entire boundary to be imported with control.

Hint:

To import single control points for FORMLSA merging "USING INRAWW TO ADD MERGE CONTROL FOR FORMLSA MERGES."


```
C:\WinGMM\inraww.exe                                    _ □ ×
AS THIS SUPPLEMENTS THE UTILITIES.
USING GCDB NUMBERING ENHANCES  THE INPUT PROCESS.

DEFAULT DISTANCE ENTRY UNITS ARE IN CHAINS.
ALL BEARINGS ARE INPUT AS MEAN GEODETIC.

YOU NEED TO PRESS S TO CHANGE A SID.

WARNING - NO SID IS DEFINED

PROJECT NAME IS T08SR30E

# OF SIDS IS    9
  48 CONTROL POINTS READ FROM .LSA FILE
 962 LINES OF RECORD INFORMATION READ FROM .RAW FILE
<1> RECORD DATA MAINTENANCE
<2> RETURN TO INPUT OF CARDINAL LINES
<3> IMPORT TOWNSHIP BOUNDARIES FROM OTHER .RAW FILE
<4> CONTROL MAINTENANCE
<5> SID MAINTENANCE
<6> CHANGE DEFAULT ERROR ESTIMATES
<7> CHANGE DISTANCE UNITS
<8> QUIT
PICK A # <8>
```

(3) IMPORT TP. BOUNDARIES. FROM OTHER .RAW FILES

If data has been already entered for any townships adjoining the current township, then that data can be imported into the current .RAW file with this utility. Importing will also try to translate the appropriate 700s to 100s and 100s to 700s. The user is given an opportunity to specify the offset ID values so that **INRAWW** can translate them as much as possible during the import. The user can also specify only a portion of the adjoining township at a time, so that different portions with different offsets can be transferred with the correct GCDB IDS.

Prompting begins with:
IMPORT WHICH BOUNDARY
(1) NORTH (THE SOUTH BOUNDARY OF A COMPLETED TOWNSHIP)
(2) SOUTH (THE NORTH BOUNDARY OF A COMPLETED TOWNSHIP)
(3) EAST (THE WEST BOUNDARY OF A COMPLETED TOWNSHIP)
(4) WEST (THE EAST BOUNDARY OF A COMPLETED TOWNSHIP)
(5) NON-STANDARD BOUNDARY TRANSFER
(6) QUIT BOUNDARY IMPORT
SELECT A # <6>

1 [CR]

INPUT OFFSET CORRECTION FOR CORNER ID (CAN BE MINUS) <0>

[CR]   (The Township. Boundary. selected has no offset corners)

INPUT SMALLEST OLD 3 DIGIT ID (ENTER FOR ALL OF LINE)
[CR]
INPUT PROJECT NAME WITH FULL PATH WHICH HAS THE IMPORT DATA

DO YOU WANT
(1) ENTIRE BOUNDARY TO BE CONTROL OR
(2) ONLY IMPORT ACTUAL CONTROL FROM .CON
PICK A # <1>

INRAWW

A .PGC FILE IS IN THE SAME DIRECTORY AS THE .RAW FILE, THE COORDINATES ALONG THE TRANSFERRED BOUNDARY WILL BE ADDED TO THE CONTROL PORTION OF YOUR CURRENT .LSA FILE.

Extremely small error estimates are assigned (into the current .SD file) to the transferred points, regardless of the real values. Importing coordinates, as described, should only be done to provide control to townships that otherwise have no control.

If user chooses **(5) NON-STANDARD...**, the prompting as described above is preceded by the prompting, below:

INPUT COMPLETED TOWNSHIP LINE ID (100000, 200000, 100, 200 ,ETC.)

200000 [CR]

INPUT NEW TOWNSHIP LINE ID (100000, 200000, 100, 200 ,ETC.)

700000 [CR]

CONTROL CORNER MAINTENANCE

NOTE: The NAD27 datum is the preferred datum, but it is possible to use NAD83 datum. See GCONW for more information.


```
C:\WinGMM\inraww.exe                                          _ □ ×
AS THIS SUPPLEMENTS THE UTILITIES.
USING GCDB NUMBERING ENHANCES   THE INPUT PROCESS.

DEFAULT DISTANCE ENTRY UNITS ARE IN CHAINS.
ALL BEARINGS ARE INPUT AS MEAN GEODETIC.

YOU NEED TO PRESS S TO CHANGE A SID.

WARNING - NO SID IS DEFINED

PROJECT NAME IS T08SR30E

# OF SIDS IS   9
   48 CONTROL POINTS READ FROM .LSA FILE
  962 LINES OF RECORD INFORMATION READ FROM .RAW FILE
<1> RECORD DATA MAINTENANCE
<2> RETURN TO INPUT OF CARDINAL LINES
<3> IMPORT TOWNSHIP BOUNDARIES FROM OTHER .RAW FILES
<4> CONTROL MAINTENANCE
<5> SID MAINTENANCE
<6> CHANGE DEFAULT ERROR ESTIMATES
<7> CHANGE DISTANCE UNITS
<8> QUIT
PICK A # <8>
```

(4) CONTROL MAINTENANCE

Changes specified by the user in this feature do not affect the .CON file until **(6) UPDATE .CON FILE** is chosen. The .LSA file is updated after the **(9) QUIT CONTROL MAINTENANCE** INRAWW feature is chosen.

SUB-MENU SCREEN FOR
CONTROL CORNER MAINTENANCE

OF CONTROL STATIONS = 0
(1) LIST CONTROL
(2) ADD CONTROL
(3) EDIT (CHANGE) CONTROL
(4) DELETE CONTROL

INRAWW

(5) IMPORT CONTROL FROM .CON FILE
(6) UPDATE .CON FILE
(7) BLOCK EDIT CONTROL ERROR ESTIMATES
(8) CONTROL POINT CHECK
(9) QUIT CONTROL MAINTENANCE
PICK A # <9>

(4) CONTROL STATION MAINTENANCE
  (1) LIST CONTROL

TOTAL NUMBER OF CONTROL STATIONS IS   3
INPUT MINIMUM LIST #

1 [CR]

INPUT MAXIMUM LIST #

3 [CR]

 NUMBER OF CONTROL STATIONS IS   3

LIST# STATION   NORTHING (Y) EASTING (X) LATITUDE
LONGITUDE   ERR. EST.   ERR. EST.
 1 140300   1538338.498 128792.903 38-58- 6.11001 119-53-20.19001
                    .001   .001
 2 400500   1548754.551 142005.629 38-59-50.88901 119-50-34.78501
                    .001   .001
 3 400600   1554050.644 142068.739 39- 0-43.23801 119-50-34.88301
                    .001   .001
PRESS ENTER TO CONTINUE

(4) CONTROL STATION MAINTENANCE
   (2) ADD CONTROL

To input control that is not yet in the .CON file:

2 [CR]

ENTERING A "U" FOR UNDO ALLOWS ONE TO ELIMINATE PREVIOUS ENTRIES
ARE INPUT COORDINATES
(1) LATITUDE , LONGITUDE
(2) NORTHING (Y), EASTING (X)
PICK A # <2>

1 [CR]

INPUT CONTROL STATION NAME: (ENTER IF FINISHED)

100700 [CR]

INPUT LATITUDE IN DDD.MMSSSS FORMAT

UPDATE .CON FILE.	**39.013379431** INPUT LONGITUDE IN DDD.MMSSSSS FORMAT **119.533603561** STATE PLANE COORDINATES NORTHING (Y) = 1559385.863 EASTING (X) = 126548.171 INPUT CONTROL STATION NAME: (ENTER IF FINISHED) ... and the prompting cycle continues.
Merge Control: *Use to add control for FORMLSA merges.* *Hint: The default error estimates for control should be set to .001 in PROJECW.*	USING INRAWW TO ADD MERGE CONTROL FOR FORMLSA MERGES To add control by importing a point's coordinates from an adjacent township, with a text editor, append a line to the .CON file in the form: *MTxxXRxxX ffffff tttttt Where: *M ' comment line coded for merge control. TxxXRxxX ' the adjacent township that coordinates. are to be imported from. ffffff ' the point id of the station coordinates. are to be imported from. tttttt ' the point id of the station coordinates. are to be imported to. Before starting INRAWW delete the existing .LSA and .SD files. Then go to (5) IMPORT CONTROL FROM A .CON FILE. INRAWW will then read in the coordinates of the station from the adjacent township, but with the point id specified.

	(4) CONTROL CORNER MAINTENANCE
	   (3) EDIT (CHANGE) CONTROL
	
	   The first prompt allows the user to see the LIST #s:
	
	DO YOU WANT TO LIST CONTROL STATION INFORMATION (Y/N) \<Y\>
	
	N [CR]
	
	   Next, the Latitude of the 2nd record is to be changed:
	
	INPUT LIST # TO EDIT: (ENTER IF FINISHED WITH EDIT OPTION)
	
	2 [CR]
	
	(1) STATION ' 991738
	(2) NORTHING (Y) ' -2096708.887
	(3) EASTING (X) ' -1422845.469

INRAWW

(4) LATITUDE 34-44- 22.64313
(5) LONGITUDE 111-33- 44.10605
(6) NORTHING ERR. EST. '   .001
(7) EASTING ERR. EST. '   .001
(8) QUIT
SELECT A # <8>

INRAWW ERROR TRAPPING

Here comes a deliberately erroneous entry:

Error trapping of invalid Latitude value.

4 [CR]

INPUT LATITUDE IN DDD.MMSSSSS FORMAT (ZERO IF NO CHANGE)

33.6133 [CR]

OOPS - YOU HAVE A STRANGE LATITUDE - ENTER LINE AGAIN
INPUT LATITUDE IN DDD.MMSSSSS FORMAT (ZERO IF NO CHANGE)

33.16332222 [CR]

(1) STATION ' 991738
(2) NORTHING (Y) ' -2630594.964
(3) EASTING (X) ' -1456312.728
(4) LATITUDE 33-16- 33.19920
(5) LONGITUDE 111-33- 44.10378
(6) NORTHING ERR. EST. '   .001
(7) EASTING ERR. EST. '   .001
(8) QUIT
SELECT A # <8>

Wrong Zone Note: Notice that the example input above was 33 16'33.2222", but **INRAWW** reported the new latitude as 33 16'33.199920, a difference of about 28 inches. To illustrate a point, this difference was deliberately caused by choosing a State Plane Zone from a distant state. **INRAWW** Version 3.00.00 converts the Lat/Long to X,Y to store it, then computes the Lat/Long from the X,Y. The mathematics will create a difference in wildly erroneous Zone choices. When the scale factor diverges very far from 1.0000, then **INRAWW** will warn the user that the zone value might be incorrect.

(4) CONTROL MAINTENANCE
   (4) DELETE CONTROL

Note: It is bad practice to delete control from the .CON file before analyzing why it does not fit. The PID might be wrong or there might be a data entry blunder in .RAW.

Note: Control can be commented out by using a text editor and adding an asterisk (*) at the beginning of the

   User can delete control from .LSA file from within **INRAWW**. Again, this does not affect the .CON file unless user later chooses (4) (6) UPDATE .CON FILE.

DO YOU WANT TO LIST CONTROL ? <N>?

DO YOU WANT TO
(1) DELETE BY STATION ID OR
(2) DELETE BY LIST #
PICK A # <1>

1 [CR]

line. This leaves the data for the point in the file but it is not used in the adjustment. After commenting out a point, delete the .LSA and .SD files, re-import control with INRAWW (option 4 and 5) and readjust. The advantage to using this method of "eliminating" control rather then deleting control is it can be uncommented at a later time and used.

INPUT CONTROL STATION NAME: (ENTER IF FINISHED)

(Type Station Name to be DELETED) **[CR]**

CONTROL STATION DELETED

INPUT CONTROL STATION NAME: (ENTER IF FINISHED)

If you know the LIST # of stations to be deleted, select (2).

2 [CR]

INPUT MINIMUM LIST # TO DELETE (ENTER IF FINISHED)

4 [CR]

INPUT MAXIMUM LIST # TO DELETE (ENTER IF FINISHED)

6 [CR]

Control LIST # stations 4,5 and 6 are DELETED.

Returns to CONTROL MAINTENANCE menu screen.

NOTE: To import control for FORMLSA MERGES see "USING INRAWW TO ADD MERGE CONTROL FOR FORMLSA MERGES."

(4) CONTROL MAINTENANCE
   (5) IMPORT CONTROL FROM .CON FILE

   A decision point is reached:

(1) READ ALL CONTROL IN .CON FILE OR
(2) USE ANY ONE STATION IN .CON
(3) PICK A PARTICULAR ONE STATION IN .CON
SELECT A # <1>

   With this choice, each control point in the .CON file is written into the .LSA file, if its station ID is not already in the .LSA file. If the user has placed a character in the first column of any control points in the .CON file, then those points will be not be brought into .LSA, nor will these "commented out" points affect the adjustment.

   The option (2), use one station in .CON will import only one station into the .LSA file. The adjustment results will be similar to that of LSMINW, except that a .COR file will be created, enabling the user to execute the CHECKER program.

   Option (3), allows the user to chose the station to be imported into .LSA. Option (3) prompt is as follows:

   ENTER THE DESIRED CONTROL STATION CORNER ID

   Whichever choice, the user is presented with a status message for each valid

control point being imported.

(4) CONTROL MAINTENANCE
 (6) UPDATE .CON FILE

The .CON file is updated with any new data that has been added in (2) ADD CONTROL. There is no prompting.

(4) CONTROL MAINTENANCE
 (7) BLOCK EDIT CONTROL ERROR ESTIMATES
  (1) EDIT ERROR ESTIMATES BY LIST NUMBER
  (2) EDIT ERROR ESTIMATES BY ITS VALUE

INRAWW automatically reads the error estimates of each control point from the two columns in the .CON file (AVG,MAX in previous PGCF format). These values are transferred to the .SD file when exiting **INRAWW**. The individual error estimates can be refined for each point through the prompting in **(3) EDIT (CHANGE) CONTROL DATA**, above. To refine the error estimates of a <u>group</u> of control points, use this block edit function.

(4) CONTROL STATION MAINTENANCE
 (7) BLOCK EDIT CONTROL ERROR ESTIMATES
  (1) EDIT ERROR ESTIMATES BY LIST NUMBER
  (2) EDIT ERROR ESTIMATES BY ITS VALUE

DO YOU WANT TO LIST CONTROL STATION INFORMATION (Y/N) <Y>

N [CR]

The usual (1) LIST CONTROL prompting cycle would occur if user answers [Y].

INPUT MINIMUM LIST # TO EDIT: (ENTER IF FINISHED WITH EDIT OPTION)

3 [CR]

INPUT MAXIMUM LIST # TO EDIT: (ENTER IF EDIT NOT DESIRED)

5 [CR]

INPUT NEW CONTROL NORTHING ERROR ESTIMATE <0.001>

55.555 [CR]

INPUT NEW EASTING CONTROL ERROR ESTIMATE < 55.555>

66.666 [CR]

Then the new data is listed to screen and the user is returned to Control Station Maintenance menu.

Hint: the N, E error values are similar to SIDs when doing a block edit.

(4) CONTROL CORNER MAINTENANCE
   (7) BLOCK EDIT CONTROL ERROR ESTIMATES
     (1) EDIT ERROR ESTIMATES BY LIST NUMBER
     (2) EDIT ERROR ESTIMATES BY ITS VALUE
DO YOU WANT TO LIST CONTROL CORNER INFORMATION (Y/N) <Y>

N [CR]

INPUT NORTHING ERROR ESTIMATE VALUE THAT NEEDS CHANGING
(PRESS ENTER IF NO NORTHING ERROR ESTIMATE CHANGE)

23.000 [CR]

INPUT NORTHING ERROR ESTIMATE VALUE THAT REPLACES IT

40.000 [CR]

INPUT EASTING ERROR ESTIMATE VALUE THAT NEEDS CHANGING
(PRESS ENTER IF NO EASTING ERROR ESTIMATE CHANGE)

23.000 [CR]

INPUT EASTING ERROR ESTIMATE VALUE THAT REPLACES IT

28.888 [CR]

All of the northing error estimates with a value of 23.000 is changed to a value of 40.000.

All of the easting error estimates with a value of 23.000 is changed to a value of 28.888.

(4) CONTROL STATION MAINTENANCE
  (8) CONTROL POINT CHECK

   This tool prompts first for what the user decides is tolerable distance
   misclosure, distance misclosure ratio and angular misclosure. It then inverses
   between control points, compares the results with survey data from the .RAW
   file, then reports results to screen, such as:

INVERSE DIST. FROM 100200 TO 203100 OF   8151.0 FT.
MISMATCHES STATION ID EST. DIST.
BY   543. FT. (1/ 15.)
PRESS ENTER TO CONTINUE

INVERSE E-W COMPONENT OF DIST. FROM 100200 TO 203100 OF
6211.3 FT.
MISMATCHES STATION ID EST. DIST.
BY   733. FT. (1/ 11.)
PRESS ENTER TO CONTINUE

INRAWW

INVERSE BEARING FROM 200200 TO 203100
MISMATCHES STATION ID BY 8. DEGREES

PRESS ENTER TO CONTINUE

SID MAINTENANCE

```
C:\WinGMM\inraww.exe                                        _□×
AS THIS SUPPLEMENTS THE UTILITIES.
USING GCDB NUMBERING ENHANCES  THE INPUT PROCESS.

DEFAULT DISTANCE ENTRY UNITS ARE IN CHAINS.
ALL BEARINGS ARE INPUT AS MEAN GEODETIC.

YOU NEED TO PRESS S TO CHANGE A SID.

WARNING - NO SID IS DEFINED

PROJECT NAME IS T08SR30E

# OF SIDS IS   9
  48 CONTROL POINTS READ FROM .LSA FILE
 962 LINES OF RECORD INFORMATION READ FROM .RAW FILE
<1> RECORD DATA MAINTENANCE
<2> RETURN TO INPUT OF CARDINAL LINES
<3> IMPORT TOWNSHIP BOUNDARIES FROM OTHER .RAW FILES
<4> CONTROL MAINTENANCE
<5> SID MAINTENANCE
<6> CHANGE DEFAULT ERROR ESTIMATES
<7> CHANGE DISTANCE UNITS
<8> QUIT
PICK A # <8>
```

(5) SID MAINTENANCE

SID data that is added or edited during SID MAINTENANCE is <u>automatically</u>
stored in the .SID file when the user quits INRAWW. The .SD file is updated at
that time to reflect these new values. The .SD is subject to constant updates
with data derived from the .SID, .DEF, .CON and .RAW files.

SUB-MENU FOR SID MAINTENANCE

(1) LIST SIDS
(2) ADD SIDS
(3) EDIT SIDS
(4) DELETE SIDS
(5) IMPORT SIDS
(6) SWITCH SIDS
(7) QUIT
PICK A # <7>

Second line of the SID is a comment line to identify the year of the survey and the surveyor.

The third and following lines in the comment lines of the SID file, identifies the use of systematic corrections and angle

(5) SID MAINTENANCE MENU
  (1) LIST SIDS

The full listing occurs here.

 SID ID   DIST ERROR   BEAR. ERROR CONTROL ERROR (N, E)
S 193427   .005   4.0PPM 0- 0-30   .001   .001
C THIS IS THE 1909   TOWNSHIP EXTERIOR

INRAWW

corrections.

--------------- END OF SID DESCRIPTION --------------
S 198198   .010   10.0PPM 0- 0- 1   .001   .001 C THIS IS THE 1950
INTERIOR LINES
--------------- END OF SID DESCRIPTION --------------
S 991738   .500   200.0PPM 0- 0- 1   .001   .001
C THIS IS THE SPECIAL SURVEY
C DT:G   <GROUND DISTANCES>
C DC: .0100   25.01 <DISTANCES CONSTANT AND PPM
CORRECTIONS>
C BT:FA   .01000 <FORW. GEOD. BRG., CONVERT TO ANGLES (ERR. EST
DD.MMSS)>
C BC: .00010 < BEARING ROTATION CORRECTION (DD.MMSS)>
--------------- END OF SID DESCRIPTION --------------

(5) SID MAINTENANCE MENU
  (2) ADD SIDS

   This feature allows the user to add SID numbers and data to the .SID file.

INPUT SID ID NAME (ENTER IF FINISHED WITH ADDING SIDS)
990000 [CR]
INPUT DISTANCE ERROR ESTIMATE CONSTANT IN FT. <   .010>
1 [CR]
INPUT DISTANCE ERROR PPM OR 1/X FORM < 10.0 PPM>
1/10000 [CR]*
INPUT BEARING ERROR ESTIMATE IN DD.MMSSSS FORMAT < 1.00000>
[CR]
INPUT CONTROL NORTHING (Y) ERROR ESTIMATE IN FT. <.001>
[CR]
INPUT CONTROL EASTING (X) ERROR ESTIMATE IN FT. < .001>
[CR]
INPUT DESCRIPTION FOR THE SID (ENTER TO QUIT DESCRIPTION)
NEW SPECIAL SURVEY [CR]

DO YOU WANT TO DEFINE DISTANCE UNITS, TYPE OR SYSTEMATIC
CORRECTION? <N>
(DIST. ARE ASSUMED CHAINS HORIZ. GROUND & NO CORRECTION IF
NOT ASSIGNED HERE)
Y [CR]
DISTANCES NATIVE UNITS ARE

* Note that "1 to 10,000" is easier to visualize for some than 100 ppm.

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Selected (3) *INTERNATIONAL FEET*	(1) CHAINS (2) SURVEY FEET (3) INTERNATIONAL FEET (4) METERS PICK A # <1> **3 [CR]** DO YOU WANT SYSTEMATIC ERROR CORRECTIONS APPLIED TO THE DISTANCES? <N> **Y [CR]** INPUT A CONSTANT (FT OR M - IN .LSA FILE UNITS) AND A PPM CORRECTION. NOTE YOU NEED TO INPUT TWO VALUES!!! THEY CAN BE NEGATIVE OR EITHER ONE CAN BE ZERO **1 [CR]** **10.00 [CR]** DO WANT TO DEFINE BEARING TYPE, APPLY SYSTEMATIC CORRECTIONS TO THEM, OR CONVERT BEARINGS TO ANGLES? <N> (BEARINGS ARE ASSUMED MEAN GEODETIC & NO CORRECTION IF NOT DEFINED HERE) **Y [CR]** ARE BEARINGS
Selected (3)GRID (STATE PLANE)	(1) MEAN GEODETIC (2) FORWARD GEODETIC (3) GRID (STATE PLANE) (4) COMPASS/MAGNETIC (5) LOCAL/ASSUMED PICK A # <1> **3 [CR]** DO YOU WANT BEARINGS CONVERTED TO ANGLES? <N> **Y [CR]** INPUT THE ANGLE ERROR IN DD.MMSS FORMAT **.0100 [CR]**
Returns to main SID menu, if no entry	DO YOU WANT TO APPLY A SYSTEMATIC CORRECTION TO ALL BEARINGS? <N> **Y [CR]** INPUT BEARING CORRECTION (CLOCKWISE +, COUNTER-CLOCKWISE -) IN DD.MMSSS FORMAT **-.0500 [CR]** INPUT SID ID NAME (ENTER IF FINISHED WITH ADDING SIDS)
The use of SID numbers for control is not supported in WinGMM. The N, E error estimate values are used instead for block edit.	**[CR]** INPUT CONTROL NORTHING (Y) ERROR ESTIMATE IN FT. <.001> **[CR]** INPUT CONTROL EASTING (X) ERROR ESTIMATE IN FT. <.001> **[CR]**
"Y" [CR] allows the USER to edit systematic corrections.	CHANGE SID DESCRIPTION (Y/N)? <N> **Y [CR]** INPUT DESCRIPTION FOR THE SID (ENTER TO QUIT)
See (5) (2) ADD SID for detail menu selection. (above)	DO YOU WANT TO DEFINE DISTANCE TYPE OR SYSTEMATIC CORRECTIONS? <N> (DIST. ARE ASSUMED HORIZ. GROUND & NO CORRECTION IF NOT ASSIGNED HERE)

N [CR]
DO WANT TO DEFINE BEARING TYPE, APPLY SYSTEMATIC
CORRECTIONS TO THEM, OR CONVERT BEARINGS TO ANGLES? <N>
(BEARINGS ARE ASSUMED MEAN GEODETIC & NO CORRECTION IF NOT
DEFINED HERE)
N [CR]

    User is returned to SID MAINTENANCE menu.

(5) SID MAINTENANCE MENU
   (4) DELETE SIDS

    This option allows the USER to delete a SID

SIDS AND ERROR ESTIMATES
LIST# SID   DIST CON PPM BEARING   NORTHING EASTING
(1) 193427   .005   4.0 0- 0-30   .001   .001
THIS IS THE 1909   TOWNSHIP EXTERIOR
(2) 198198   .010   10.0 0- 0- 1   .001   .001
THIS IS THE 1950   TOWNSHIP INTERIOR
(3) 991738   .500 200.0 0- 0- 1   .001   .001
THIS IS THE SPECIAL SURVEY
(4) 990000   1.000 100.0 0- 0- 1   .001   .001
THIS IS THE 2ND SPECIAL SURVEY
(5) QUIT
SELECT A # < 5>

The 4th SID was selected to be deleted   **4 [CR]**

SIDS AND ERROR ESTIMATES
LIST# SID   DIST CON PPM BEARING   NORTHING EASTING
(1) 193427   .005   4.0 0- 0-30   .001   .001
THIS IS THE 1909   TOWNSHIP EXTERIOR
(2) 198198   .010   10.0 0- 0- 1   .001   .001
THIS IS THE 1950   TOWNSHIP INTERIOR
(3) 991738   .500 200.0 0- 0- 1   .001   .001
THIS IS THE SPECIAL SURVEY
(4) QUIT
SELECT A # TO DELETE< 4>
[CR]

    User is returned to SID MAINTENANCE menu.

(5) SID MAINTENANCE MENU
   (5) IMPORT SIDS

WHAT IS THE PROJECT NAME FOR THE SIDS TO BE IMPORTED WITH
FULL EXTENSIONS (ENTER IF NONE)

This feature will read the data from the .SID file of another project (job) and add it to the current project's .SID file.

This menu item is activated when an "S" is typed from the keyboard in data entry.

The default value is the current active SID.

<0> Current Active SID is : NONE

<4> Current Active SID is : 990000

(5) SID MAINTENANCE
  (6) SWITCH SIDS

Change the SID # that is automatically tagged to each line that INRAWW adds to .RAW file.

PICK A SID
(0) NO SID (DEFAULT ERROR ESTIMATES)
(1) 193427   THIS IS THE 1909 TOWNSHIP EXTERIOR
(2) 198198   THIS IS THE 1950 TOWNSHIP INTERIOR
(3) 991738   THIS IS THE SPECIAL SURVEY
(4) 990000   NEW SPECIAL SURVEY
SELECT A # < 0>

The user selects the appropriate SID that corresponds to the survey data being entered in (2) RETURN TO INPUT OF CARDINAL LINES, then prompting returns to where the user left off.

(5) SID MAINTENANCE
  (7) QUIT

Returns USER to main INRAWW menu

CHANGE DEFAULT ERROR ESTIMATES

INRAWW

```
AS THIS SUPPLEMENTS THE UTILITIES.
USING GCDB NUMBERING ENHANCES  THE INPUT PROCESS.

DEFAULT DISTANCE ENTRY UNITS ARE IN CHAINS.
ALL BEARINGS ARE INPUT AS MEAN GEODETIC.

YOU NEED TO PRESS S TO CHANGE A SID.

WARNING - NO SID IS DEFINED

PROJECT NAME IS T08SR30E

# OF SIDS IS   9
  48 CONTROL POINTS READ FROM .LSA FILE
 962 LINES OF RECORD INFORMATION READ FROM .RAW FILE
<1> RECORD DATA MAINTENANCE
<2> RETURN TO INPUT OF CARDINAL LINES
<3> IMPORT TOWNSHIP BOUNDARIES FROM OTHER .RAW FILES
<4> CONTROL MAINTENANCE
<5> SID MAINTENANCE
<6> CHANGE DEFAULT ERROR ESTIMATES
<7> CHANGE DISTANCE UNITS
<8> QUIT
PICK A # <8>
```

(6) CHANGE DEFAULT ERROR ESTIMATES

   (1) DISTANCES 1.0 FT. PLUS   1700. PPM

INPUT DISTANCE ERROR ESTIMATE CONSTANT IN FT. <1.000>

 .5 [CR]

INPUT DISTANCE ERROR PPM OR 1/X FORM < 100.0 PPM>

1/10000 [CR]

CURRENT DEFAULT ERROR ESTIMATES
(1) DISTANCES   **.500** FT. PLUS   100. PPM
(2) BEARINGS 0- 4- 0   (D-M-S)
(3) CONTROL NORTHING (Y)   20.000
(4) CONTROL EASTING (X)   20.000
(5) QUIT ERROR ESTIMATE EDIT
PICK A # <5>

(6) CHANGE DEFAULT ERROR ESTIMATES
   (2) BEARINGS   0- 4- 0 (D-M-S)

INPUT BEARING ERROR ESTIMATE IN DD.MMSSSS FORMAT
(ENTER FOR NO CHANGE)

.001 [CR]

CURRENT DEFAULT ERROR ESTIMATES
(1) DISTANCES   .500 FT. PLUS   100. PPM
(2) BEARINGS **0- 0-10**   (D-M-S)
(3) CONTROL NORTHING (Y)   20.000
(4) CONTROL EASTING (X)   20.000
(5) QUIT ERROR ESTIMATE EDIT
PICK A # <5>

(6) CHANGE DEFAULT ERROR ESTIMATES
   (3) CONTROL NORTHING (Y) 20.000

INPUT CONTROL NORTHING (Y) ERROR ESTIMATE IN FT.
(ENTER FOR NO CHANGE)

30 [CR]

CURRENT DEFAULT ERROR ESTIMATES
(1) DISTANCES   .500 FT. PLUS   100. PPM
(2) BEARINGS 0- 0-10 (D-M-S)
(3) CONTROL NORTHING (Y) **30.000**
(4) CONTROL EASTING (X) 20.000
(5) QUIT ERROR ESTIMATE EDIT
PICK A # <5>

(6) CHANGE DEFAULT ERROR ESTIMATES
   (4) CONTROL EASTING (X) 20.000

INPUT CONTROL EASTING (X) ERROR ESTIMATE IN FT.
(ENTER FOR NO CHANGE)

30 [CR]

CURRENT DEFAULT ERROR ESTIMATES
(1) DISTANCES   .500 FT. PLUS   100. PPM
(2) BEARINGS 0- 0-10 (D-M-S)
(3) CONTROL NORTHING (Y) 30.000
(4) CONTROL EASTING (X) **30.000**
(5) QUIT ERROR ESTIMATE EDIT
PICK A # <5>

[CR]

   Returns to main INRAWW menu

CHANGE DISTANCE UNITS
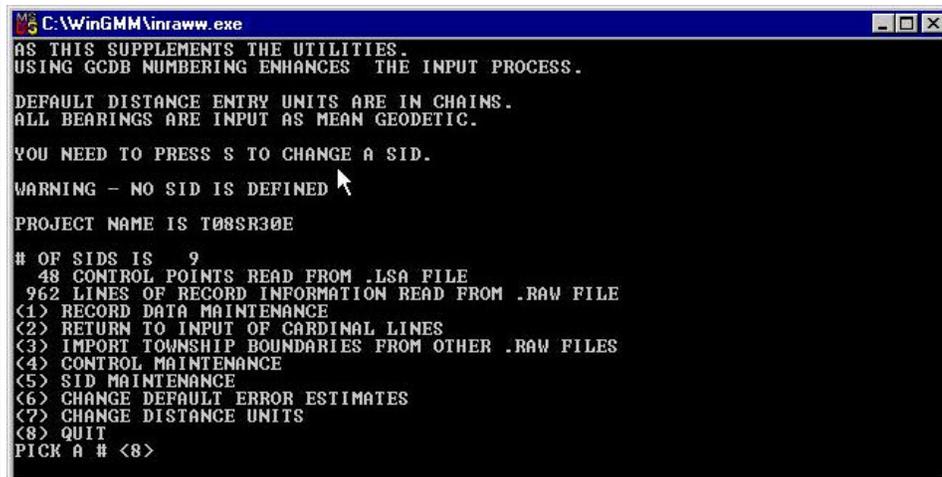
(7) CHANGE DISTANCE UNITS

This powerful but simple feature changes the assumed units of distance. Every distance entered is automatically converted from the assumed units to chain units. CAUTION: INRAWW defaults to CHAINS units each time it is started and this feature MUST be invoked to set to any other unit, before continuing.

Among the many ways the user is protected from stumbling into the wrong units is the prompt that occurs immediately after this feature is chosen:

 DISTANCE ENTRY/DISPLAY UNIT IS CHAINS

CHANGE UNITS (Y/N)? <N>

Y [CR]

DO YOU WANT DISTANCE ENTRY/DISPLAY UNITS TO BE

 (1) CHAINS

Choosing this option returns the default units to chains. No conversion of entered distances is performed. All displayed distances are in chain units.

 (2) FEET

Choosing this option changes the input default units to feet. All entered distances are converted from feet to chains. All displayed distances are in feet units.

INRAWW
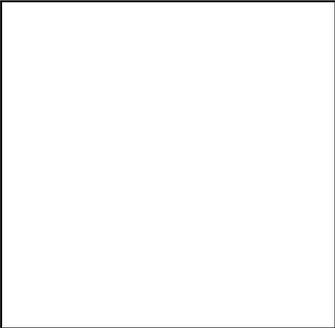
(3) METERS

Choosing this option changes the input default units to meters. All entered distances are converted from meters to chains. All displayed distances are in meter units.

PICK A # <1>
CR

QUIT

```
C:\WinGMM\inraww.exe                                        _ □ ✕
AS THIS SUPPLEMENTS THE UTILITIES.
USING GCDB NUMBERING ENHANCES  THE INPUT PROCESS.

DEFAULT DISTANCE ENTRY UNITS ARE IN CHAINS.
ALL BEARINGS ARE INPUT AS MEAN GEODETIC.

YOU NEED TO PRESS S TO CHANGE A SID.

WARNING - NO SID IS DEFINED

PROJECT NAME IS T08SR30E

# OF SIDS IS    9
  48 CONTROL POINTS READ FROM .LSA FILE
 962 LINES OF RECORD INFORMATION READ FROM .RAW FILE
<1> RECORD DATA MAINTENANCE
<2> RETURN TO INPUT OF CARDINAL LINES
<3> IMPORT TOWNSHIP BOUNDARIES FROM OTHER .RAW FILES
<4> CONTROL MAINTENANCE
<5> SID MAINTENANCE
<6> CHANGE DEFAULT ERROR ESTIMATES
<7> CHANGE DISTANCE UNITS
<8> QUIT
PICK A # <8>
```

(8) QUIT

NOTE: Any control data that has been altered during this session of INRAWW that has not been specifically saved to the .CON files, will only be written to the .LSA file.

See (4) CONTROL CORNER MAINT. (6) UPDATE .CON file, above.

The user must choose this option to allow updating of several of the data files. Users should NEVER abort INRAWW or data from that session will not be saved. If the user chooses to abort INRAWW (Ctrl-C), the user returns immediately to the WinGMM window without certain functions occurring

The QUIT feature writes out the user's session to .RAW, .SD and .LSA. INRAWW will create any of these files that may not exist.

Another important process takes place; INRAWW will search out all 1/4 sec. corners. In .RAW and will remove them if all the following conditions are met:

- The 1/4 sec. corner is at midpoint and on line.

- Section lines are all that touch the 1/4 sec. Corner, i.e. There is no minor subdivision in the raw file for that section.

- The 1/4 sec. corner is not a control point.

This prompt is displayed while exiting from INRAWW. <Y> is the default. If (.GEN) is not desired you must enter a <N>.

- The SID #s coming into and going out of the 1/4 corner are identical (equal error estimates). These 1/2 mile pairs are combined into 1-mile legs.

After running APROPW, all "removed" 1/4 sec. corners. are replaced at true midpoint, where they belong.

See Chapter 5 for more info on GEN.

GENERATE INITIAL COORDINATES FROM CLOSURES (. GEN.) (Y)
CR
  "Y" Approximate coordinates are generated from the input data. GEN does not have to be run prior to adjustment.
  " N" No coordinates are generated, GEN must be run to generate approximate coordinates prior to adjustment.

INRAWW

GEN

To run GEN: This option is not included in WinGMM as a separate pulldown menu item.

NOTE: In WinGMM most functions of this program are executed automatically while exiting INRAWW. Running .GEN will produce a .GEN file that is useful in Blunder Detection.

Purpose of GEN:

GEN is used to generate approximate coordinates for every point listed in the .LSA file and append them to the end of the .LSA file. By answering **Y**es to the prompt, "USE EXISTING COOR. IN LSA? <N>", when exiting INRAWW, coordinates are also generated and appended to the .LSA file. But no report file is created. Coordinates must be generated prior to running any of the least square adjustment (LSGMMW) routines.

Required files: .DEF   Default data for this project
                                   .LSA   Data existing in .LSA is line and control data.

Optional files: none

Output files: .GEN   A readable report of misclosure information
                                   .LSA   A list of updated coordinates for use by LSGMMW

What happens: When GEN is invoked, it finds all normal sections in the data and calculates approximate corrdinates using a compass rule adjustment. When closures cannot be found, it traverses using bearing and distance out to remaining points.

GEN forms a list of the actions it takes, misclosures it calculates, and the problems encountered and writes this data to the .GEN file. The generated approximate coordinates are appended to the .LSA file. The coordinates are required for LSGMMW.

User response: GEN has no prompting. The user may interpret the .GEN file to see how the data in the .RAW file fits together geometrically. Refer to the chapter on Blunder Detection in the *WinGMM User Guide- GCDB Collection Procedures* for a discussion on how to interpret the .GEN file.

LSMINW

To run LSMINW: From the WinGMM main window menu, select "Command/Data Quality Tools/Minimal Constraint Lease squares (LSMINW)"
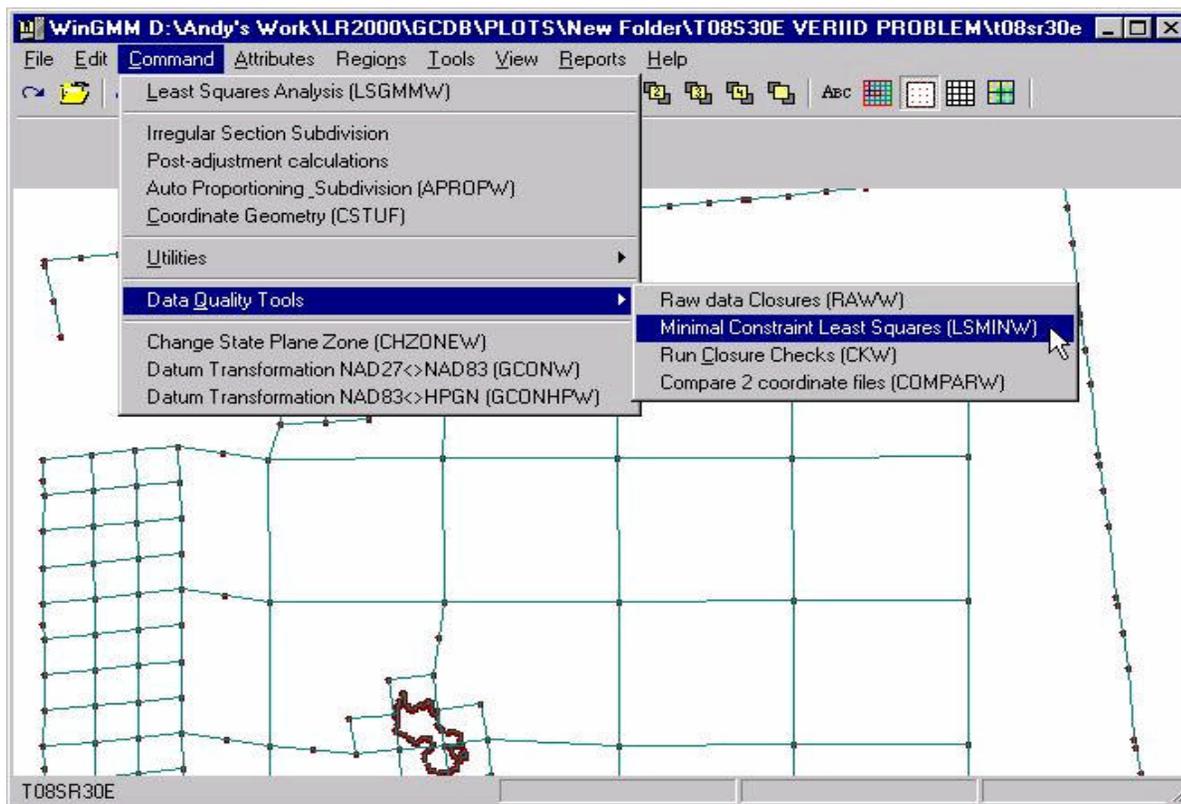
Purpose of LSMINW:
    LSMINW is used to analyze the project's survey data by performing a minimally constrained least squares adjustment of the .RAW file using a single control point. Analysis of the output data is an important tool in blunder detection of the survey data independent of errors in control. Refer to *WinGMM User Guide-GCDB Collection Procidures*, Blunder Detection Tools and Strategy: PROJECW.

Required files: .LSA   This is a list of each measurement's value
                            .SD   This is a list of each measurement's error estimate
                            .DEF   There is zone information here

Optional files: none

Output files: .MIN   An ASCII report of adjustments to measurements similar to the .ADJ file from
                                    LSGMMW.
What happens:
    When LSMINW is invoked, it analyzes the geometric inconsistencies in the survey data and the error estimates that the user has provided. This allows statistical analysis based solely on the information in the RAW file. This is very useful in determining blunders in data entry of platting errors.

User response:
    LSMINW has no prompting, unless ROBUSTING has been set on. Refer to *WinGMM User Guide-GCDB Collection Procidures*, Blunder Detection Tools and Strategy for a discussion of robusting.
     If robusting is on, then at the point that LSMINW would normally return back to the operating system prompt, instead it prompts:

LSMINW

```
MAX. DISTANCE RESIDUAL 100600              - 100640           OF        27.542

BEARING RESIDUAL RMS =    0-10-47 (D-M-S) SNOOP RMS =     .2
MAX. BEARING RESIDUAL 600700              -500700           =  1-10-10 (D-M-S)

DO YOU WANT TO READJUST WITH NEW WEIGHTS (Y/N) <N>
y
PICK A RE-WEIGHT TYPE
(1) CONTROL COORDINATES
(2) DISTANCES
(3) ANGLES
(4) BEARINGS
(5) QUIT <5>
2


DISTANCES HAVE BEEN ROBUSTED

PICK A RE-WEIGHT TYPE
(1) CONTROL COORDINATES
(2) DISTANCES
(3) ANGLES
(4) BEARINGS
(5) QUIT <5>
```

In this example, distances were robusted once. The user may choose any type of measurement, any number of times before exiting.	UPDATING APPROXIMATE COORDINATES IN .LSA FILE DO YOU WANT TO READJUST WITH NEW WEIGHTS (Y/N) ? **[Y]** PICK A RE-WEIGHT TYPE (1) CONTROL COORDINATE (2) DISTANCES (3) ANGLES (4) BEARINGS <5> QUIT **[2]** DISTANCES HAVE BEEN ROBUSTED PICK A RE-WEIGHT TYPE (1) CONTROL COORDINATE (2) DISTANCES (3) ANGLES (4) BEARINGS <5> QUIT **[CR]** DO YOU WANT TO READJUST WITH NEW WEIGHTS (Y/N) ?

LSGMMW

To run LSGMMW: From the WinGMM main window menu, select "Command/Least Squares Analysis (LSGMMW)"
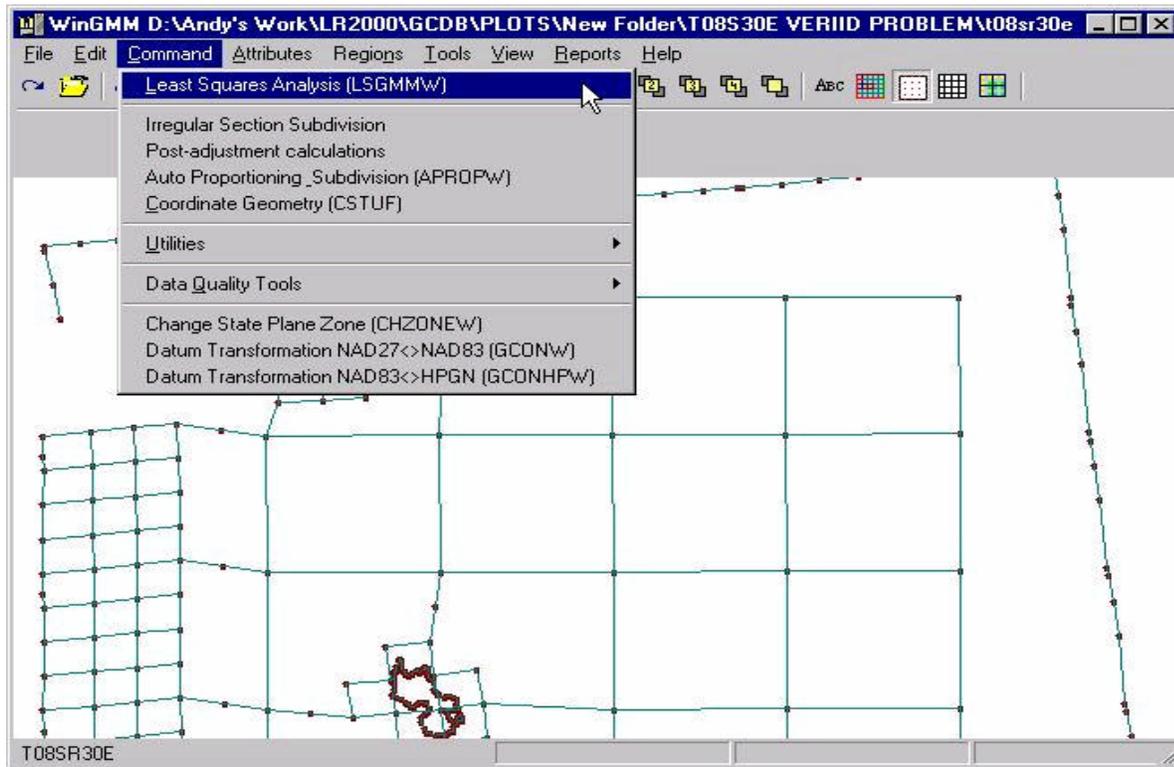
Purpose of LSGMMW:

    LSGMMW analyzes the project's entire data set and performs a least squares adjustment utilizing all measurements and control points based on error estimates provided by the user. Refer to the <u>WinGMM Technical Reference Manual- Blunder Detection Tools and Strategy</u> for a more comprehensive discussion of LSGMMW output files.

Required files:	.LSA	This is a list of each measurement's value and approximate coordinates from .GEN or a previous run of LSGMMW
	.SD	This is a list of each measurement's error estimate
	.DEF	This contains zone data

Output files	.COR	Adjusted State Plane coordinates
	.GEO	coordinates converted to Lat/long units
	.PGC	An equivalent to the PGCF file from PCCS
	.ADJ	Report of adjustment amounts, statistics.

What happens:

    When LSGMMW is invoked, it analyzes the geometric inconsistencies in the data and the error estimates that the user has provided. It then applies adjustments to each measurement so that overall, the least amount of adjustment is applied to the data set.

User response:

    LSGMMW has no prompting, unless ROBUSTING has been set on. Refer to the <u>WinGMM Technical Reference Manual- Blunder Detection Tools and Strategy: P**ROJECW**</u> for a discussion of robusting.

If robusting is on, then at the point that LSGMMW would normally return back to the operating system prompt, instead it prompts:

In this example, distances were robusted once. The user may choose any type of measurement, any number of times before exiting.	**UPDATING APPROXIMATE COORDINATES IN .LSA FILE** **DO YOU WANT TO READJUST WITH NEW WEIGHTS (Y/N) <N>** **[Y]** PICK A RE-WEIGHT TYPE (1) CONTROL COORDINATE (2) DISTANCES (3) ANGLES (4) BEARINGS <5> QUIT **[1]** CONTROL COORDINATES HAVE BEEN ROBUSTED PICK A RE-WEIGHT TYPE (1) CONTROL COORDINATE (2) DISTANCES (3) ANGLES (4) BEARINGS <5> QUIT **[CR]** DO YOU WANT TO READJUST WITH NEW WEIGHTS (Y/N)?

APROPW

To run APROPW: From the WinGMM main window menu, select "Command/Auto Proportioning Subdivision (APROPW)"

These procedures are also available in this document Section 2, "Post-Adjustment Calculations" and "Irregular Section Subdivision."
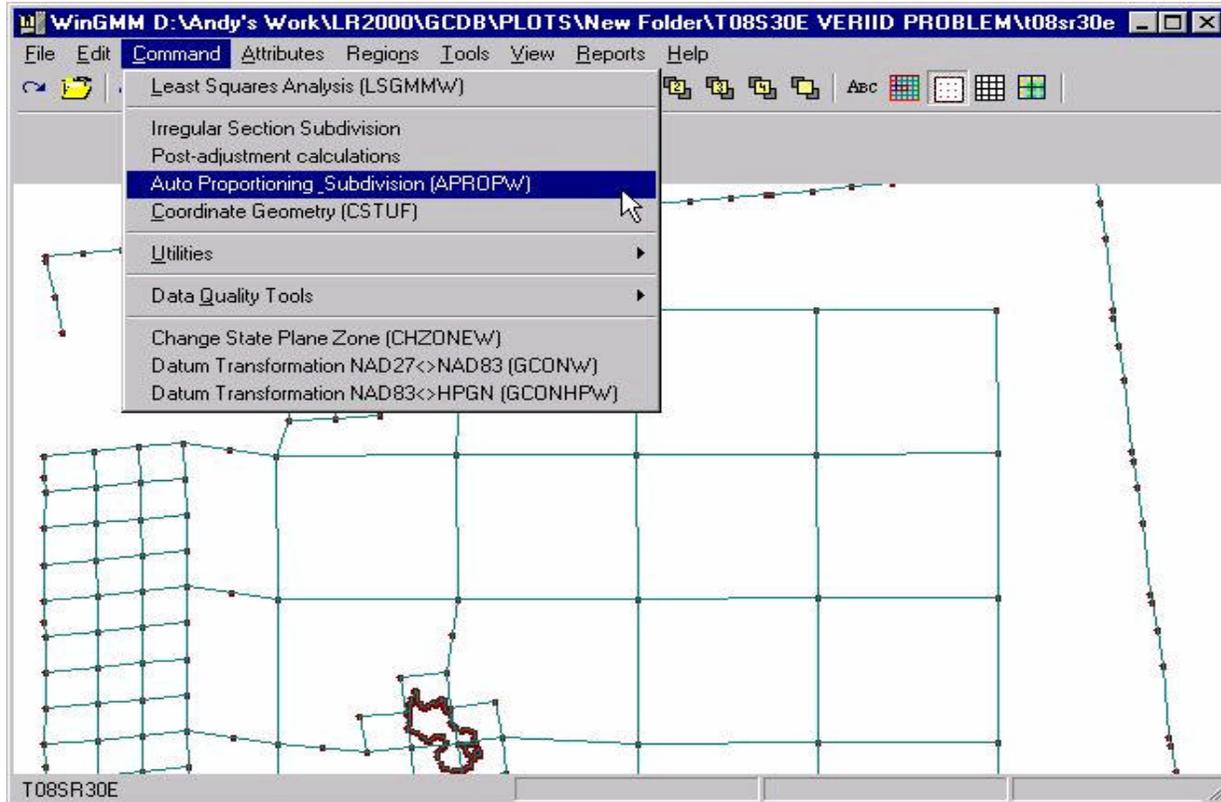
MAIN PROGRAM FEATURES

Purpose of APROPW:

APROPW is used to subdivide all sections and to save a definition of what processes were used to subdivide each section. Both irregular and additional computations can be defined. It will also remove computed coordinates from line files. APROPW has the ability to define lines and points that might be used in subdivisions, but should not be displayed or treated as parcel boundaries. Intersections with special survey boundaries can be generated automatically. See Subdivision of Sections in WinGMM User Guide GCDB Collection Procedures for more information on using APROP.

Required files: .COR   Computed coordinates of corners
                          .DEF   Properties of project (Zone, Datum, State, etc.)
                          .RAW   Surveyed lines measurement data

These files will be read if they exist. Information in the following files preserves previous work:

                          .IRR   Data file of ID substitutions, subdivision definitions and non-computable
                                      points

| | .ADD | Data file of instructions necessary to compute intersections, minor subdivisions, additions lines, etc. |
| | .NOT | Data file of points & lines to NOT display |

Output files:	.SUB	Readable report listing all procedures used to subdivide township.
	.IRR	Data file of ID substitutions, subdivision definitions and non-computable points
	.ADD	Data file of instructions necessary to compute intersections, minor subdivisions, additions lines, etc.
	.LXN	Data file of polygons by PID traverses.
	.NOT	Data file of points & lines to NOT display

| Files updated: | .COR | Same file but with subdivision coordinates |
| | .PGC | Same file but with subdivision coordinates |

REGIONAL NOTE:

For the .PGC file to contain regionally adjusted Lat/Long and point reliabilities, APROPW must be executed on each township after the regional adjustment process. Refer to *WinGMM User Guide-GCDB Collection Procedures,* REGIONAL ADJUSTMENT OF DATA. It is possible that parcel information can change after a regional adjustment. This will be indicated when executing APROP and there are additional intersections computed.

CAUTION:

Occasionally, results may differ from what was expected. This may be the result of points in the .COR file that are not relevant. In these cased it is easiest to simply delete the .COR file and re-run INRAWW, LSGMMW and APROPW.

UNDERSTANDING THE LOGIC OF THE PROMPTING

APROPW provides a seemingly infinite amount of avenues for the user to take. The reader will not be served by a verbose listing of every possible interaction that is available. Many prompts throughout the program are identical in purpose and syntax. Below is a single reference for the user to access when confronted with prompt messages, rather than explain these processes repeatedly through the document.

PROMPT FOR CORNER INPUT

INPUT FROM CORNER (ENTER TO QUIT)

This prompt is simply for the 6-digit GCDB ID number.

PROMPT FOR LINE INPUT

The user is prompted for the ID of the "From" point, then followed by a prompt for bearing, see below, then distance, see below.

PROMPT FOR BEARING

IS DIRECTION DEFINED BY   <1> TO CORNER INPUT (2) BEARING INPUT

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The user must choose whether to define the bearing as toward an existing point or to specify a QDD.MMSS value (same input rules as in INRAWW). The data at hand will help the user decide the procedure to use.

BEARING IS   <1> STRAIGHT LINE OR   (2) MEAN GEODETIC

After the bearing is defined, the user is given the opportunity to define how the program computes the line. Normally, STRAIGHT LINES would be used in the interior of sections where MEAN GEODETIC is used for special survey, section, and township lines.

PROMPT FOR DISTANCE

INPUT TRAVERSE DISTANCE (CH), SHORT PROPORTION DISTANCE (CH),
OR PRESS ENTER FOR MIDPOINT

The default is midpoint between the endpoints of the defined bearing line. If a distance value is specified, the following prompt occurs to determine if that value is a fixed distance (traverse) or is the short proportion distance of the total distance.

For example, if the user entered, **21.543 [CR]** then more data is needed:

INPUT TOTAL PROPORTION DISTANCE (CH), PRESS ENTER IF TRAVERSE

The default is a line with a fixed (traverse) distance of 21.543 chains.

If the user enters **40 [CR]**, the 21.543 and 40 defines the proportion 21.543/40 that is applied to the inverse distance between the two endpoints used to define the line.

RETURNING TOWARD THE MAIN MENU

The default choice of most menu prompts is to return through the menu process. The user sometimes has no choice but to move forward through a process. APROPW has what it assumes as valuable data, but not enough to conclude the process currently running. APROPW is trying to keep the user from losing that data.

When the user invokes the APROPW program, all points in the .COR file not represented in the .raw file are deleted from the .COR file.

The tools in this feature are used in situations where: *Odd IDS like 102300 are used to control subdivision, (2)* *Double sets of corners with IDS such as198500 & 200502 share functions of a section corner. (3)* *Some corners do not exist because they fall in a lake or inside a Special Survey. (4) - (8)*	**(1)EDIT/INPUT NON-STANDARD SECTION BREAKDOWN INFORMATION**

```
C:\WinGMM\apropw.exe
APROP GMM VER. 3.00.00 09-30-99

PROJECT NAME IS T10S60W

ELEVATION USED IN ALL PROPORTIONS IS      6000.0

   95 CORNERS IDENTIFIED IN .RAW FILE
  130 LINES OF RECORD INFORMATION READ FROM .RAW FILE
   95 CORNERS IDENTIFIED AFTER .COR FILE READ IN
DO YOU WANT TO
<1> EDIT/INPUT NON-STANDARD SECTION BREAKDOWN INFORMATION
<2> ADD EXTRA COMPUTATIONS
<3> QUIT WITHOUT PROPORTIONING
<4> AUTOMATIC PRELIMINARY NON-STANDARD SECTION BREAKDOWN OF ALL SECTIONS
<5> INPUT/DELETE "NOT" FUNCTIONS
<6> PROPORTION AND QUIT
PICK A # <6>
_
```

The IRR functions

Although **APROPW** will subdivide regular sections automatically the first time, there are situations that it cannot and should not make assumptions about. The user uses this set of tools to define the processes needed to handle non-standard sections. These defined processes are stored in the **.IRR file** enabling all future executions of the program to generate the same results without additional user input.

Non-standard sections are edited one at a time, each section being called up by section number or by the center of section ID. Note that an option now exists to generate most if not all of the .IRR file entries. See (4) AUTOMATIC PRELIMINARY NON-STANDARD SECTION BREAKDOWN OF ALL SECTIONS, below.

IDENTIFY SECTION BY STANDARD # OR GCDB CENTER OF SECTION ID
PRESS ENTER TO QUIT, ENTER? TO GET LIST OF DEFINED IRREGULAR SECTIONS
[31]

 [CR] returns a list of defined irregular sections)

 31 [CR] or 140140 [CR] are both valid answers to begin editing in section 31. The submenu is always preceded with a character-based graphic of the section that scrolls to the top of the screen, followed by the menu choices:

100198(C)   120200(C)   140200(C)   160200(U)   198200(C)

100160(U)   120160(U)   140160(U)   160160(U)   200160(U)

100140(C)   120140(U)   140140(U)   160140(U)   200140(C)

100120(U)   120120(U)   140120(U)   160120(U)   200120(U)

100100(C)   120100(C)   140100(C)   160100(U)   200100(C)

These IDS represent the corners that are used to control the subdivision process, and are in the relative position of those corners. The character in parenthesis is a code that defines the general status of that corner.

APROPW

C ' Computed, N ' Non-computable, U ' Uncomputed, yet

The user must keep in mind that double section corners of partial control can exist, each of which controls the subdivision in some way. In the above display format, only one corner can be displayed.

(1) EDIT/INPUT NON-STANDARD SECTION BREAKDOWN INFORMATION
   (1) **SHOW STATUS**

This option is an aid for reviewing the EXACT status of all non-standard corners within the section.

```
CORNER SUBSTITUTIONS
STANDARD NAME    ACTUAL NAME
   200100      198100
PRESS ENTER

SECTION CORNER   OF SECTION CONTROLLING DIRECTION
   100202          NW            E
   198100          SE            W
PRESS ENTER

NO NON-COMPUTABLE QUARTER CORNERS
PRESS ENTER

CENTER OF SECTION IS STANDARD
PRESS ENTER

NO NON-COMPUTABLE EXTERIOR SIXTEENTH CORNERS
PRESS ENTER

NO NON-COMPUTABLE OR PARENTHETICAL INTERIOR SIXTEENTH
CORNERS
PRESS ENTER

NO NON-STANDARD CENTER OF QUARTER SECTIONS
PRESS ENTER

NO PROPORTIONS REQUIRING OFFSET TO LINE
PRESS ENTER
```

In the preceding example, Sec 31 has two irregular criteria. Each major criteria, organized in order of menu choices, is presented one at a time, with a message and any pertinent data listed. The user steps forward through this data with **[CR]**.

(1) EDIT/INPUT NON-STANDARD SECTION BREAKDOWN INFORMATION
   (2)**CORNER NAME SUBSTITUTIONS**

200202

S 3 1

200200

Here we are about to make a deliberate mistake

Now we correct our mistake

Sometimes corners that control subdivision have non-standard IDS. (2) CORNER ID SUBSTITUTIONS allows the user to specify which corners are actually controlling. In the Sec 31 example, 200202 has been defined as the real NE corner.

```
LIST #   STANDARD NAME   ACTUAL NAME
   1    200200    200202
   2  ADD DATA
   3 QUIT THIS OPTION
PICK A LIST # TO EDIT, ADD, OR QUIT < 3>
```

For example:

```
2
ENTER STANDARD ID (ENTER TO QUIT)
200100
ENTER NON-STANDARD ID (ENTER TO QUIT)
200122
SUCCESSFUL SUBSTITUTION
ENTER STANDARD ID (ENTER TO QUIT)
[CR]
LIST #   STANDARD NAME   ACTUAL NAME
   1    200200    198202
   2    200100    200122
   3  ADD DATA
   4 QUIT THIS OPTION
PICK A LIST # TO EDIT, ADD, OR QUIT < 4>
```

The program does not recognize incorrect data entry, it simply follows orders. To edit/delete the erroneous 200122, choose (2) from above list.

```
STANDARD ID IS 200100
ENTER NEW STANDARD ID, D TO DELETE, OR ENTER IF NO CHANGE
D
```

Instead of changing the value of 200122, this example deletes the whole entry.

(1) EDIT/INPUT NON-STANDARD SECTION BREAKDOWN INFORMATION
   (3) DEFINE DOUBLE SECTION CORNERS

If **APROPW** has been told to substitute 200198 for 200200, **APROPW** assumes that 200198 would be the corner that controls Sec 30's subdivision both to the N and to the W. In this example, the user must define double section corners. The user specifies that 202200 controls to the North, and **APROPW** will then understand that 200198 controls to the W only. **APROPW** will consider 202200 and 200198 as "double" section corners, of equal status. Choice (3) DEFINE DOUBLE SECTION CORNERS brings the following prompts:

ENTER CONTROLLING SECTION CORNER (ENTER TO QUIT)

202200
200200

200198

S 3 1

APROPW

202200
CORNER IS IN WHAT CORNER OF SECTION?
INPUT CORNER OF SECTION ID (QUADRANT # OR LETTERS) <SE>
2
SECTION CORNER CONTROLS IN WHAT DIRECTION?
INPUT CARDINAL LETTER OR NUMBER (ENTER IF NO CHANGE) <W>
N
ENTER CONTROLLING SECTION CORNER (ENTER TO QUIT)
[CR]
LIST # SECTION CORNER OF SECTION CONTROLLING DIRECTION
   1   200198   SE   W
   2   202200   SE   N
   3 ADD DATA
   4 QUIT THIS OPTION
PICK A LIST # TO EDIT, ADD, OR QUIT < 4>

(1) EDIT/INPUT NON-STANDARD SECTION BREAKDOWN
INFORMATION
   (4) QUARTER CORNER EDIT

   APROPW assumes that all exterior 1/4 corners are at midpoint on one-mile
   lines and center 1/4 corners are at intersection. If some 1/4 corners do not
   exist, then (4) QUARTER CORNER EDIT is where the user lists them so
   APROPW will not compute them. The prompting goes:

NO NON-COMPUTABLE QUARTER CORNERS - BEGIN ENTERING THEM
LIST #   NAME
   1 ADD DATA
   2 QUIT THIS OPTION
PICK A LIST # TO EDIT, ADD, OR QUIT < 2>
1
ENTER CORNER ID (ENTER TO QUIT)
140100
SUCCESSFUL IDENTIFICATION OF NON-COMPUTABLE QUARTER
CORNER
ENTER CORNER ID (ENTER TO QUIT)

140100
CORNER IS ALREADY IN THE NON-COMPUTABLE LIST - TRY AGAIN
ENTER CORNER ID (ENTER TO QUIT)
[CR]
LIST #   NAME
   1   140100
   2 ADD DATA
   3 QUIT THIS OPTION
PICK A LIST # TO EDIT, ADD, OR QUIT < 3>

   To delete a corner from the non-computable list, choose its number from the
   above menu thus:
1
SCORNER ID IS 140100
ENTER NEW CORNER ID, D TO DELETE, OR ENTER IF NO CHANGE
D
NO NON-COMPUTABLE QUARTER CORNERS - BEGIN ENTERING THEM

APROPW

LIST #   NAME
   1 ADD DATA
   2 QUIT THIS OPTION
PICK A LIST # TO EDIT, ADD, OR QUIT < 2>

*This should be the first
choice for determining the
center of sections. Use ADD
only when necessary.*

(1) EDIT/INPUT NON-STANDARD SECTION BREAKDOWN
INFORMATION
   (5) CENTER OF SECTION EDIT

   The non-standard center of section can be computed in many ways. Choosing
   (5) CENTER OF SECTION EDIT will bring a menu of several tools:
5

CENTER OF SECTION IS STANDARD
EDIT CENTER OF SECTION INFO (Y/N) ? <N>
Y
N-S LINE OF CENTER OF SECTION IS DETERMINED BY
(1) STRAIGHT LINE BETWEEN QUARTER CORNERS
(2) WEIGHTED MEAN OF TWO BEARING DEFINED BY CORNER ID
(3) AVERAGE OF TWO INPUT BEARINGS
(4) PARALLEL TO BEARING DEFINED BY CORNER ID INPUT
(5) PARALLEL TO INPUT BEARING
(6) FROM CORNER ID, BEARING, DISTANCE
(7) NO N-S LINE
PICK A # OR PRESS ENTER TO QUIT CENTER OF SECTION EDIT

*Typical example of N-S line
being parallel to E
boundary, E-W line being
weighted mean brg between
N & S boundaries.*

   Once the N-S line is defined, then the same choices occur for the E-W line.

   Note that choice (3) AVERAGE OF TWO INPUT BEARINGS will result in a
   calculation of "weighted mean bearing".

(1) EDIT/INPUT NON-STANDARD SECTION BREAKDOWN
INFORMATION
   (6) EXTERIOR SIXTEENTH CORNER EDIT

   If an exterior sixteenth corner cannot exist, this feature allows the user to
   declare it non-computable. If any sixteenth exists, but is not at midpoint, the
   record data should be entered in the .RAW file.

NO NON-COMPUTABLE/PARENTHETICAL EXTERIOR SIXTEENTH
CORNERS - BEGIN ENTERING THEM
LIST #   NAME   PARENTHETICAL DIST (CH) TOTAL DIST
   1 ADD DATA
   2 QUIT THIS OPTION
   PICK A LIST # TO EDIT, ADD, OR QUIT < 2>

   (7) INTERIOR SIXTEENTH CORNER EDIT

   The following prompting sequence shows how a user can force **APROPW** to
   use a specific proportion to compute a centerline 1/16th.

NO NON-COMPUTABLE/PARENTHETICAL INTERIOR SIXTEENTH

CORNERS - BEGIN ENTERING THEM
LIST #   NAME   PARENTHETICAL DIST (CH) TOTAL DIST
  1 ADD DATA
  2 QUIT THIS OPTION
PICK A LIST # TO EDIT, ADD, OR QUIT < 2>
1
ENTER CORNER ID (ENTER TO QUIT)
440460
YOU MAY ENTER ONE OR TWO DISTANCES (SPACE BETWEEN) FOR
BOTH PARENTHETICALS AND TOTALS (TO QUARTER CORNER). TWO
DISTANCES WILL BE STORED IN AN AVERAGE

INPUT PARENTHETICAL DISTANCE IN CH (ENTER IF
NON-COMPUTABLE)
19.80
INPUT TOTAL DISTANCE(S) TO QUARTER CORNER(S) < 39.800>
39.80
SUCCESSFUL IDENTIFICATION OF PARENTHETICAL SIXTEENTH
CORNER
ENTER CORNER ID (ENTER TO QUIT)
[CR]
LIST #   NAME   PARENTHETICAL DIST (CH) TOTAL DIST
  1   440460   20.000   39.800
  2 ADD DATA
  3 QUIT THIS OPTION
PICK A LIST # TO EDIT, ADD, OR QUIT < 3>

NOTE: TWO DISTANCES WILL BE STORED IN AN AVERAGE

   If the user enters in the plat parentheticals of the section boundary, such as
20.06 20.10 [CR], then **APROPW** will compute the average, 20.08, and store
that value as the centerline parenthetical distance.

   (8) CENTER OF QUARTER SECTION EDIT.

   It begins first with a prompt for which quadrant to work in.

ENTER LIST # OF QUARTER SECTIONS TO EDIT

A CORNER ID TO ADD TO LIST, OR ENTER TO QUIT THIS OPTION

**(9) DEFINE PROPORTIONED CORNERS REQUIRING OFFSET TO
LINE**

   APROPW will compute subdivision corners at the correct single
proportionate distance on a straight line between controlling corners. There is
not yet a feature that crosschecks between angle points and the corners that
need offsetting. In order for **APROPW** to calculate points at correct
proportion AND on the line, the user must choose (9) DEFINE
PROPORTIONED **CORNER**S REQUIRING OFFSET TO LINE. Once the
user has listed the corners to move, **APROPW** will compute the correct x, y.
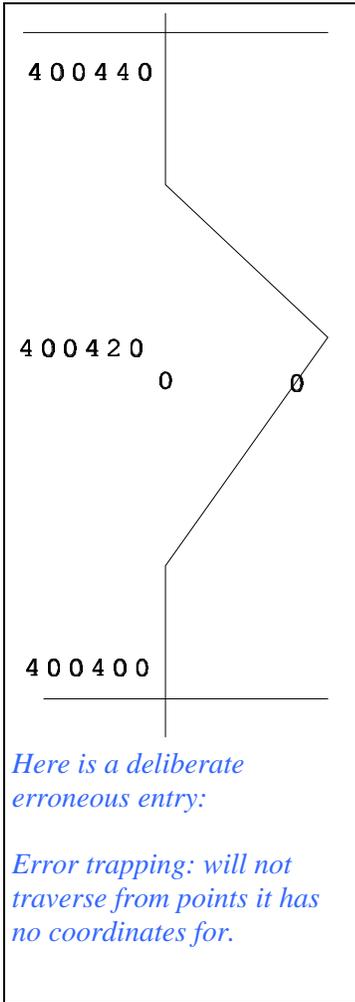
```
                                    LIST #   NAME
  400440                               1    500420
                                       2  ADD DATA
                                       3 QUIT THIS OPTION
                                    PICK A LIST # TO EDIT, ADD, OR QUIT < 3>
                                    3


                                    ENTER CORNER ID (ENTER TO QUIT)
  400420                            400520
          0         0              CORNER NOT FOUND - TRY AGAIN


                                    ENTER CORNER ID (ENTER TO QUIT)
                                    400420
                                    SUCCESSFUL IDENTIFICATION OF PROP. POINT TO LINE
                                    ENTER CORNER ID (ENTER TO QUIT)

  400400
```

Here is a deliberate erroneous entry:

Error trapping: will not traverse from points it has no coordinates for.

(1) EDIT/INPUT NON-STANDARD SECTION BREAKDOWN INFORMATION
   (10) DO NOT SUBDIVIDE SECTION INTERIOR

   This choice prevents the section from being subdivided, by making the center 1/4 of section noncomputable. This has been used to prevent protracted sections from subdividing while allowing surveyed sections in the same township to be subdivided. Be aware that subdivision along section and townships lines will occur.

(1) EDIT/INPUT NON-STANDARD SECTION BREAKDOWN INFORMATION
   (11) PRELIMINARY IRREGULAR IDENTIFICATION

   This choice will allow **APROPW** to make a good try at creating this section's entry into the .IRR file. Offset interior lines (non-common 1/16ths), double sets of section corners, etc. will be defined. The user can immediately choose (1) SHOW STATUS for a listing of what happened, although the .SUB file has a more comprehensive description. Using the View program will also show any inconsistencies that must be edited. Also note that choice 4 on the main menu will perform this function for all sections.
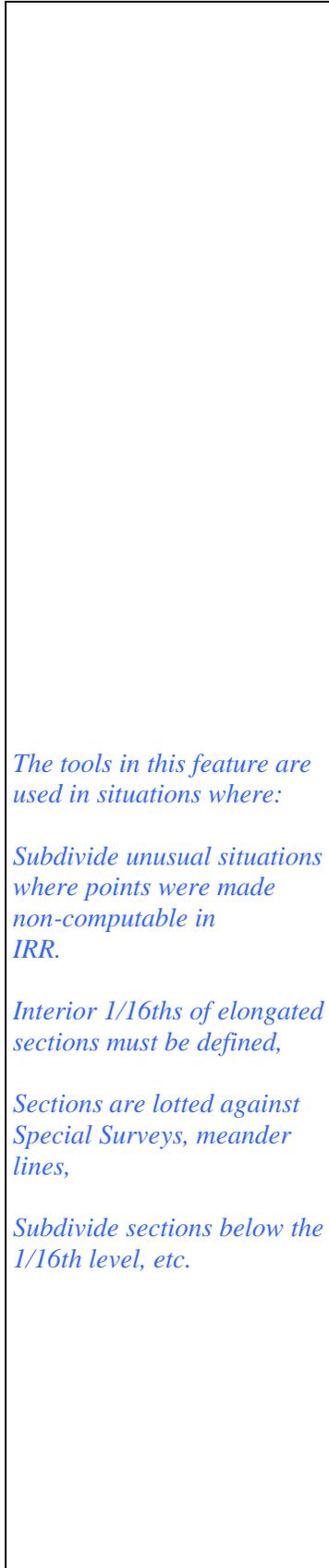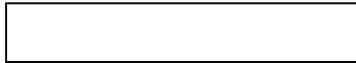
The tools in this feature are used in situations where:

Subdivide unusual situations where points were made non-computable in IRR.

Interior 1/16ths of elongated sections must be defined,

Sections are lotted against Special Surveys, meander lines,

Subdivide sections below the 1/16th level, etc.

(2) <u>ADD EXTRA COMPUTATIONS</u>


```
C:\WinGMM\apropw.exe                                        _ □ ×
APROP GMM VER. 3.00.00 09-30-99

PROJECT NAME IS T10S60W

ELEVATION USED IN ALL PROPORTIONS IS       6000.0

  95 CORNERS IDENTIFIED IN .RAW FILE
 130 LINES OF RECORD INFORMATION READ FROM .RAW FILE
  95 CORNERS IDENTIFIED AFTER .COR FILE READ IN
DO YOU WANT TO
<1> EDIT/INPUT NON-STANDARD SECTION BREAKDOWN INFORMATION
<2> ADD EXTRA COMPUTATIONS
<3> QUIT WITHOUT PROPORTIONING
<4> AUTOMATIC PRELIMINARY NON-STANDARD SECTION BREAKDOWN OF ALL SECTIONS
<5> INPUT/DELETE "NOT" FUNCTIONS
<6> PROPORTION AND QUIT
PICK A # <6>
_
```

The ADD functions

ADD extra computations is a coordinate geometry toolbox that is customized for the *WinGMM* environment. What the user specifies as processes are stored in the .ADD file. This portion of **APROPW** does not "know" it is subdividing a section. However, a corner computed through ADD, if given an aliquot ID such as 440440, can be used by other portions of **APROPW** that will recognize that point as a subdivision point.

When **APROPW** runs, it calculates all points it can from the .ADD information, all the points it can from the .IRR information, then the

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remaining normal subdivision, and then it returns to the .ADD information to calculate what it missed on the first pass.

CAUTION: DO NOT instruct ADD to calculate points that are calculated using IRR. The results will be undesirable and often results in multiple intersections being calculated.

Use this tool to determine what has been defined in the .ADD file.	(2) ADD EXTRA COMPUTATIONS
	  (1) LIST ADDITIONS
	
	If additions have been defined, they will be listed in one of these general formats:
	
	TRAVERSE/PROPORTION SOLUTION FOR 406400
	FROM CORNER IS 400400
	BEARING DEFINED TO CORNER 440400 (STRAIGHT)
	TRAVERSE DISTANCE IS 5.500 CH.
	************** PRESS ENTER ****************
	
	TRAVERSE/PROPORTION SOLUTION FOR 406406
	FROM CORNER IS 406400
	BEARING IS QUADRANT # 1 .00000 (DD.MMSS STRAIGHT)
	MIDPOINT PROPORTION
	************** PRESS ENTER ****************
	
	INTERSECTION SOLUTION FOR 406406
	FROM CORNER IS 406400
	BEARING IS QUADRANT # 1 .01000 (DD.MMSS STRAIGHT)
	2ND FROM CORNER IS 400406
	BEARING IS QUADRANT # 3 89.59000 (DD.MMSS MEAN)
	************** PRESS ENTER ****************
	    The prompt cycle gives the user the choice of displaying by list number or by point id range.

This feature is a valuable OOPS tool.	(2) ADD EXTRA COMPUTATIONS (2) DELETE ADDITIONS When the user wishes to delete a point that has been solved by the (2) ADD EXTRA COMPUTATIONS feature, the point and the solution for that point is deleted. INPUT SOLVED FOR CORNER ID WHOSE DEFINED SOLUTION IS TO BE DELETED PRESS ENTER TO QUIT DELETE OPTION **406406** SUCCESSFUL DELETION INPUT SOLVED FOR CORNER ID WHOSE DEFINED SOLUTION IS TO BE DELETED PRESS ENTER TO QUIT DELETE OPTION
This tool allows the user to define to WinGMM what is	The prompt cycle gives the user the choice of deleting by list number or by computed point id range.

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*NOTE: For those users who regionally adjust, when using the AUTOI portion of **APROPW** to do the intersections with special surveys, delete all 950xxx points from ADD before final run of **APROPW**.*

(2) ADD EXTRA COMPUTATIONS
   (3) INPUT ADDITIONS

   The user has several categories to choose from.

(1) TRAVERSE/PROPORTION
(2) GENERAL INTERSECTION
(3) PLANE INTERSECTION BY CORNER ID
(4) AUTOMATIC SUBDIVISION OF 1/4 1/4 SECTION OR SMALLER
(5) AUTOMATIC ELONGATED SECTION COMPUTATIONS
(6) ADD A LINE
(7) AUTOMATIC IRR & ADD A LINE IN SHORT SECTIONS
(8) AUTOMATIC ADD A LINE FOR N-S LINES IN 3 MILE METHOD SECTIONS
(9) QUIT ADD
PICK A # <9>

   Selecting either 1 or 2 results in the prompting cycle shown below:
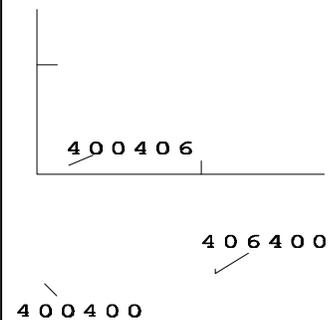
(2) ADD EXTRA COMPUTATIONS
   (3) INPUT ADDITIONS
     (1) TRAVERSE/PROPORTION

   This feature allows the user to put a point on a line at a fixed distance or proportioned between endpoints.

INPUT CORNER ID FOR POINT TO BE POSITIONED (ENTER TO QUIT)
400406
INPUT FROM CORNER ID (ENTER TO QUIT)
400400
IS DIRECTION DEFINED BY
(1) TO CORNER ID INPUT
(2) BEARING INPUT
(3) PARALLEL TO (ON LINE OR WEIGHTED MEAN)
PICK A # <1>
1
INPUT TO CORNER ID
400420
BEARING IS
(1) STRAIGHT LINE OR
(2) MEAN GEODETIC
PICK A # <1>
2
INPUT TRAVERSE DISTANCE (CH), OR PROPORTION DISTANCE FROM CORNER IC 400400 (CH)
OR PRESS ENTER FOR MIDPOINT
5
INPUT TOTAL PROPORTION DISTANCE (CH), PRESS ENTER IF TRAVERSE
[CR]
INPUT CORNER ID NAME FOR POINT TO BE POSITIONED (ENTER TO QUIT)

Mean geodetic is the best choice for section lines...
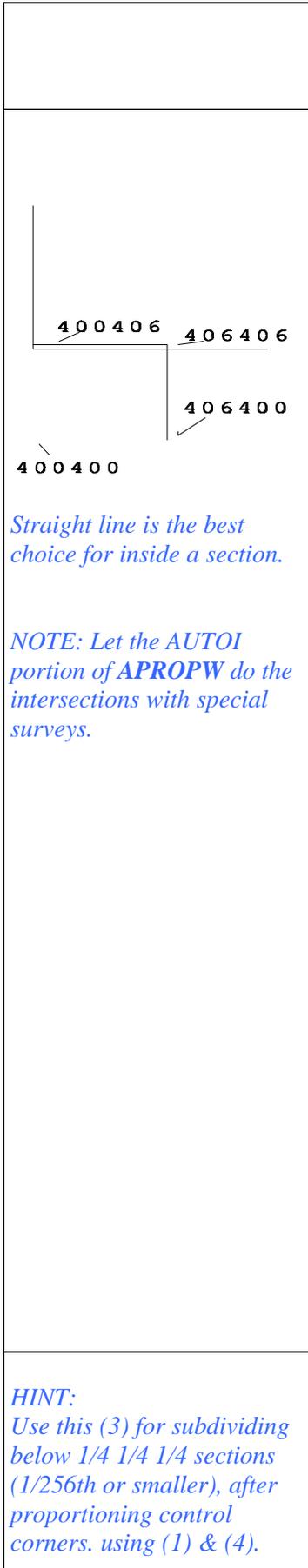
4 0 0 4 0 6

4 0 6 4 0 0

4 0 0 4 0 0

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Refer to (1) LIST ADDITIONS, above for an example of how this process gets listed.

(2) ADD EXTRA COMPUTATIONS
　　(3) INPUT ADDITIONS
　　　　(2) GENERAL INTERSECTION

INPUT CORNER ID FOR POINT TO BE POSITIONED (ENTER TO QUIT)
406406
INPUT FROM CORNER (ENTER TO QUIT)
406400
IS DIRECTION DEFINED BY
(1) TO CORNER INPUT
(2) BEARING INPUT
PICK A # <1>
2
INPUT QUADRANT # & BEARING (DD.MMSSSS) OR N, S, E, W FOR CARDINAL DIRECTION
1 .01
BEARING IS
(1) STRAIGHT LINE OR
(2) MEAN GEODETIC
PICK A # <1>
1
NEXT INPUT REFERS TO SECOND LINE OF INTERSECTION INPUT FROM CORNER
400406
IS DIRECTION DEFINED BY
(1) TO CORNER INPUT
(2) BEARING INPUT
PICK A # <1>
2
INPUT QUADRANT # & BEARING (DD.MMSSSS) OR N, S , E, W FOR CARDINAL DIRECTION
3 89.59
BEARING IS
(1) STRAIGHT LINE OR
(2) MEAN GEODETIC
PICK A # <1>
1
INPUT CORNER ID FOR POINT TO BE POSITIONED (ENTER TO QUIT)

Refer to (1) LIST ADDITIONS, above for an example of how this process gets listed.

(2) ADD EXTRA COMPUTATIONS
　　(3) INPUT ADDITIONS
　　　　(3) PLANE INTERSECTION BY CORNER ID

INPUT CORNER ID TO BE POSITIONED (ENTER TO QUIT)
202162

Straight line is the best choice for inside a section.

*NOTE: Let the AUTOI portion of **APROPW** do the intersections with special surveys.*

HINT:
Use this (3) for subdividing below 1/4 1/4 1/4 sections (1/256th or smaller), after proportioning control corners. using (1) & (4).

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	INPUT FROM CORNER (ENTER TO QUIT) **200162** INPUT TO CORNER ID **205162** NEXT INPUT REFERS TO SECOND LINE OF INTERSECTION INPUT FROM CORNER ID **202160** INPUT TO CORNER ID **202165** INPUT CORNER ID TO BE POSITIONED (ENTER TO QUIT) Prompting continues until user quits with **[CR]**. This allows multiple corners to be entered in one session.

These examples create 1/64 corners in the NW1/4 NW1/4 and the NW1/4 NW1/4 NW1/4 of sec 32.
 	
This wizard subroutine can only subdivide by creating midpoints and intersecting those midpoint positions. It will not correctly subdivide lots, which must be done manually or by editing the .add file.
	(2) ADD EXTRA COMPUTATIONS
	   (3) INPUT ADDITIONS
	     (4) AUTOMATIC SUBDIVISION OF 1/4 1/4 SECTION OR SMALLER
	
	AUTOMATIC SUBDIVISION in this choice is very automatic, merely responding with the appropriate ID for a 64th or 256th.
	
	INPUT CENTER CORNER ID OF 1/4 1/4 OR 1/4 1/4 1/4 SECTION (ENTER TO QUIT)
	210170
	INPUT CENTER CORNER ID OF 1/4 1/4 OR 1/4 1/4 1/4 SECTION (ENTER TO QUIT)
	205175
	INPUT CENTER CORNER ID OF 1/4 1/4 OR 1/4 1/4 1/4 SECTION (ENTER TO QUIT)

Note that this function works best if all 1/16ths between the 1/4 COR and township exterior have not been entered in the .RAW file. Example: 140200-100200 ' 77.43 where overall sec dist ' 97.43.
 	
Remember the point id requirements of using multiples of 5's and 10's for naming the 1/16th corners. If user requirements dictate a different point id scheme,
	(2) ADD EXTRA COMPUTATIONS
	   (3) INPUT ADDITIONS
	     (5) AUTOMATIC ELONGATED SECTION COMPUTATIONS
	
	This feature computes the elongated 1/16ths, including the normal 1/16th. It assumes all entries in the .RAW file between the 1/4 COR and the township exterior are not 1/16ths.
	
	INPUT SECTION # OR GCDB CENTER OF SECTION ID (ENTER TO QUIT)
	6
	INPUT DIRECTION OF ELONGATION (N, S, E, W) <W>
	W
	ADDING 1 COLUMNS OF LOTS APPEARS REASONABLE
	ENTER CORRECT NUMBER OF ROWS/COLUMNS OF LOTS < 1>
	1

APROPW

8-15

the routine may still be used, but the user must edit the .add file to insert the desired point IDs.	INPUT SECTION # OR GCDB CENTER OF SECTION ID (ENTER TO QUIT)
	
	   Continue thru prompts until all elongated sections have been calculated.
	
	   Below is the **ERROR** message for when a section is too short for elongation.
	
	INPUT SECTION # OR GCDB CENTER OF SECTION ID (ENTER TO QUIT)
	1
	INPUT DIRECTION OF ELONGATION (N, S, E, W) <E>
	N
	SECTION IS TOO SHORT FOR AUTOMATED ELONGATION
	INPUT SECTION # OR GCDB CENTER OF SECTION ID (ENTER TO QUIT)

This function allows the addition of lines to the .LXN lines file.
 	
HINT: Go to (5) on the main menu to "NOT" out a line from the .LXN file.
	(2) ADD EXTRA COMPUTATIONS
	    (3) INPUT ADDITIONS
	        (6) ADD A LINE
	
	INPUT FROM CORNER FOR ADD A LINE (ENTER TO QUIT)
	200200
	INPUT TO CORNER FOR ADD A LINE (ENTER TO QUIT)
	300300
	INPUT FROM CORNER FOR ADD A LINE (ENTER TO QUIT)
	
	   and so on ....

This function is for auto adding of lines to short secs. Selecting (1) will calculate an entire edge of the township. Selecting (2) allows the selection of secs. The example is of single sec. selection, but the prompts are similar.
 	
1/16 COR missing
1/4 corners missing
Two 1/16 corners missing
	(2) ADD EXTRA COMPUTATIONS
	    (3) INPUT ADDITIONS
	        (7) AUTOMATIC ADD A LINE IN SHORT SECTIONS
	
	DO YOU WANT TO DO THIS BY
	(1) AUTOMATIC ENTIRE EDGE OF TOWNSHIP OR
	(2) INPUT OF INDIVIDUAL SECTIONS
	PICK A NUMBER <2>
	2
	INPUT SECTION # OR GCDB CENTER OF SECTION ID (ENTER TO QUIT)
	6
	DOES THE SECTION CLOSE
	(1) TO THE NORTH
	(2) TO THE WEST
	(3) TO THE SOUTH
	(4) TO THE EAST
	PICK A NUMBER <1>
	1
	HOW SHORT?
	(1) 20 CHAINS SHORT (4 LOTS, 8 STANDARDS)
	(2) 40 CHAINS SHORT (4 LOTS, 4 STANDARDS)
	(3) 60 CHAINS SHORT (4 LOTS, ZERO STANDARDS)
	PICK A # OR PRESS ENTER TO QUIT
	1
	INPUT SECTION # OR GCDB CENTER OF SECTION ID (ENTER TO QUIT)

APROPW

This feature is a wizard for just what it says it does.

Selecting (1) will calculate an entire township.
Selecting (2) allows the selection of secs.

(2) ADD EXTRA COMPUTATIONS
    (3) INPUT ADDITIONS
       (8) AUTOMATIC ADD A LINE FOR N-S LINES IN 3 MILE
       METHOD SECTIONS

DO YOU WANT TO DO THIS BY
(1) AUTOMATIC ENTIRE TOWNSHIP OR
(2) INPUT OF INDIVIDUAL SECTIONS
PICK A NUMBER <2>
2
INPUT SECTION # OR GCDB CENTER OF SECTION ID (ENTER TO QUIT)
6
INPUT SECTION # OR GCDB CENTER OF SECTION ID (ENTER TO QUIT)

Return to the ADD editing menu.

F(2) ADD EXTRA COMPUTATIONS m
    (3) INPUT ADDITIONS
       (9) QUIT ADD
PICK A # <9>
9
(1) LIST ADDITIONS
(2) DELETE ADDITIONS
(3) INPUT ADDITIONS
(4) QUIT ADDITION EDIT
PICK A # <4>

Selecting <4> returns to the main APROPW menu.

Choosing to "abort" APROPW like this will not destroy the data entry done in this session. The .IRR, .ADD and .NOT files will have the latest data generated.

(3) QUIT WITHOUT PROPORTIONING

This feature allows the user to exit without having to wait for a great deal of recomputation. The three choices below are explained below in (4) PROPORTION AND QUIT

(1) NOT UPDATE THE .COR AND .PGC FILES
(2) UPDATE .COR & .PGC FILES WITH GENERATED CORNERS AS TEMPS (ALPHA APPENDED)
(3) UPDATE .COR, & .PGC FILES WITH GENERATED CORNERS WITH GCDB IDS

If the user doesn't like the results once this option has been invoked, the choices are either to edit using the (1) edit/input of nonstand.....breakdown or completely deleting the .IRR file and start from scratch

(4) AUTOMATIC PRELIMINARY NON-STANDARD SECTION BREAKDOWN OF ALL SECTIONS

All 36 sections will be analyzed and APROPW will guess what the entries into the .IRR will be. This is equivalent to choosing PRELIMINARY IRREGULAR IDENTIFICATION 36 times. Refer to page 8-12 for a more detailed description.

CAUTION: NEVER use

(3) INPUT/DELETE "NOT" FUNCTION

APROPW

the NOT function to make a point non-computable. Use the IRR function for that.

```
C:\WinGMM\apropw.exe                                              _ □ X
APROP GMM VER. 3.00.00 09-30-99

PROJECT NAME IS T10S60W

ELEVATION USED IN ALL PROPORTIONS IS      6000.0

   95 CORNERS IDENTIFIED IN .RAW FILE
  130 LINES OF RECORD INFORMATION READ FROM .RAW FILE
   95 CORNERS IDENTIFIED AFTER .COR FILE READ IN
DO YOU WANT TO
<1> EDIT/INPUT NON-STANDARD SECTION BREAKDOWN INFORMATION
<2> ADD EXTRA COMPUTATIONS
<3> QUIT WITHOUT PROPORTIONING
<4> AUTOMATIC PRELIMINARY NON-STANDARD SECTION BREAKDOWN OF ALL SECTIONS
<5> INPUT/DELETE "NOT" FUNCTIONS
<6> PROPORTION AND QUIT
PICK A # <6>
-
```

Here is where the user specifies what points and lines are not to be displayed or are not to be treated as parcel boundaries. The listed points and lines are stored in the .NOT file. These points and lines will not appear in the .LXN file, so the display will be more like the survey plat and the MTP.

NOTE: A NOT point will not have lines into or out of it. Lines w/ NOT points at the end, will not be intersected by AUTOI. A NOT line will not be intersected by AUTOI. They are points and lines NOT used for POLYGON creation in the .LXN file.

This function allows points to NOT be included in the .LXN file.
It also allows for the deletion of NOT points from the .NOT file by placing a minus sign before the PID.

(5) INPUT/DELETE "NOT" FUNCTIONS
  (1) ADD/DELETE NO COMPUTE CORNER IDS

INPUT CORNER ID TO NOT COMPUTE, ENTER WITH MINUS SIGN (-240200)
TO REMOVE FROM LIST
PRESS ENTER TO QUIT THIS OPTION
540460
INPUT CORNER ID TO NOT COMPUTE, ENTER WITH MINUS SIGN (-240200)
TO REMOVE FROM LIST
PRESS ENTER TO QUIT THIS OPTION
540420

This function allows lines to NOT be included in the .LXN file.
A minus sign in front of the point id will delete from the .not file

(5) INPUT/DELETE "NOT" FUNCTIONS
    (2) ADD/DELETE DO NOT DRAW LINES IN LXN CORNER IDS

INPUT FROM CORNER ID FOR NOT DRAW LINE, ENTER WITH MINUS SIGN (-240200)
TO REMOVE FROM LIST
PRESS ENTER TO QUIT THIS OPTION
460460
ENTER TO CORNER ID
PRESS ENTER TO QUIT THIS OPTION
460500
INPUT FROM CORNER ID FOR NOT DRAW LINE, ENTER WITH MINUS

APROPW

SIGN (-240200)
TO REMOVE FROM LIST
PRESS ENTER TO QUIT THIS OPTION

(5) INPUT/DELETE "NOT" FUNCTIONS
  (3) LIST NO COMPUTE CORNER IDS

DO NOT COMPUTE POINTS ARE:

540460
540420
PRESS ENTER TO CONTINUE

(5) INPUT/DELETE "NOT" FUNCTIONS
  (4) LIST DO NOT DRAW LINES IN LXN CORNER IDS

DO NOT COMPUTE LINES ARE:
460460 460500
PRESS ENTER TO CONTINUE

Return to main APROPW menu.

(5) INPUT/DELETE "NOT" FUNCTIONS
  <5> QUIT NOT DEFINITIONS

(6) <u>PROPORTION AND QUIT</u>

```
C:\WinGMM\apropw.exe                                    _□×
APROP GMM VER. 3.00.00 09-30-99

PROJECT NAME IS T10S60W

ELEVATION USED IN ALL PROPORTIONS IS      6000.0

  95 CORNERS IDENTIFIED IN .RAW FILE
 130 LINES OF RECORD INFORMATION READ FROM .RAW FILE
  95 CORNERS IDENTIFIED AFTER .COR FILE READ IN
DO YOU WANT TO
<1> EDIT/INPUT NON-STANDARD SECTION BREAKDOWN INFORMATION
<2> ADD EXTRA COMPUTATIONS
<3> QUIT WITHOUT PROPORTIONING
<4> AUTOMATIC PRELIMINARY NON-STANDARD SECTION BREAKDOWN OF ALL SECTIONS
<5> INPUT/DELETE "NOT" FUNCTIONS
<6> PROPORTION AND QUIT
PICK A # <6>
_
```

When this feature is chosen, APROPW uses the .IRR file to calculate non-standard subdivision corners, the remaining normal corners are calculated with the standard rules of subdivision, then the .ADD file is used to calculate the remaining non-standard corners.

Selecting (6) displays the below messages and menu selection.

DETERMINATION OF QUARTER CORNERS AT GEODETIC MIDPOINT

DETERMINATION OF CENTERS OF SECTION

DETERMINATION OF SIXTEENTH CORNERS ON TOWNSHIP AND
SECTION LINES

DETERMINATION OF SIXTEENTH CORNERS INSIDE SECTIONS
ANALYZING PARENTHETICALS

PARENTHETICAL DISTANCES HAVE BEEN IDENTIFIED IN .RAW FILE
THESE VALUES WILL BE USED IN SUBDIVISION OF SECTION

DETERMINATION OF CENTERS OF QUARTER SECTIONS
ADDITIONAL COMPUTATIONS

DO YOU WANT TO
(1) NOT UPDATE THE .COR AND .PGC FILES
(2) UPDATE .COR & .PGC BUT NO INTERSECTIONS OF POLYGONS
(3) UPDATE .COR, .PGC INTERSECTIONS, AND POLYGONS

 PICK A # <3>

This feature is for quickly and harmlessly quitting the program; a coffee break option.

(6) PROPORTION AND QUIT
  (1) NOT UPDATE THE .COR AND .PGC FILES

  This choice allows the user to exit quickly and without any computations
  being appended to the .COR and .PGC files. The processes that have been
  defined with the APROPW tools are still recorded in the proper files.

This feature is used for experimenting with different processes and creating different sets of results that can be compared with COMPARW.

(6) PROPORTION AND QUIT
  (2) UPDATE .COR & .**PGC BUT NO INTERSECTIONS OF POLYGONS**
  This allows the user to compute all subdivisions, yet store them with PIDs like
  320340G. The user specifies which character to use; there are 26 choices.
  APROPW will NOT recognize these corners as valid aliquot corners.

This choice is necessary to produce the final output files.

The .INT & .SUB files are important to review. Refer to the WinGMM Technical Reference Manual for a discussion on how to interpret the .SUB file.

(6) PROPORTION AND QUIT
  (3) UPDATE .COR & .PGC **INTERSECTIONS, AND POLYGONS**

  The coordinates generated by the APROPW computation are appended to the
  .COR, and .PGC files. In addition, the .LXN and .SUB files are generated.
  And the AUTOI portion generates the .INT file and adds any intersections to
  the .ADD file. The messages shown below are displayed.

UPDATING .LXN FILE
UTM COORDINATES WILL BE IN ZONE 11
LONGITUDE OF CENTRAL MERIDIAN IS 117. DEGREES W.
NON-STANDARD LINES START AT RECORD 1294 IN .LXN
TOTAL # OF RECORDS IN .LXN IS 1299
BEGINNING COMPUTING INTERSECTIONS
  12 INTERSECTIONS WERE COMPUTED (SEE .INT FILE)
UPDATING .COR AND .PGC FILES

APROPW
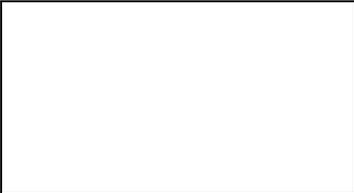
UPDATING .LXN FILE
FINISHED WITH .LXN UPDATING
BEGINNING POLYGON CREATION
 596 POLYGONS FOUND
Stop - Program terminated

CSTUF

To run CSTUF: From the WinGMM main window menu, select "Command/Coordinate Geometry (CSTUF)"
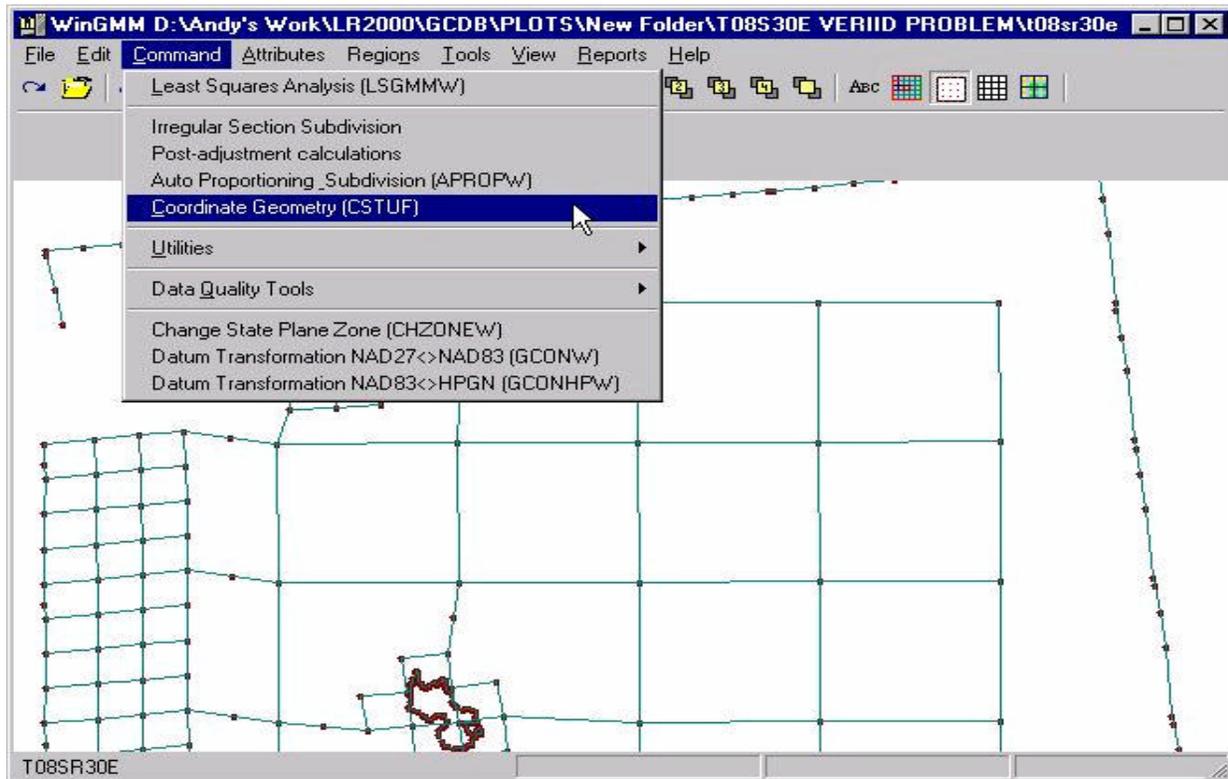
MAIN PROGRAM FEATURES

Purpose of CSTUF: . Many standard COGO functions can be accomplished using this program (horizontal aspects). If running in state plane coordinates, quickly switch into geodetic mode or visa-versa. CSTUF is also where post-adjusted coordinates are converted into a binary format for use in CEFB.

Once a project has been defined, clicking on this feature launches a DOS pop-up utility program called CSTUF.

Be sure to name the file with the .cr extension when prompted for the name of the resulting file (Ctrl+F5).

This is a listing of the available Function Keys and their function.

F2   Saves all coordinates computed.
F3   Allows the user to exit from CSTUF.
F4   Allows the user to toggle open or closed the CSTUF report file "project.CSR".
F5   Sets the program for geometric computations mode.
F6   Allows the user to list a series of points either geographic or state plane coordinates.
F7   Allows the user to add new corners or points to the .COR file. May be entered in Geodetic or Plane mode depending on the status of F9.
F8   Allows the deletion of corners.
F9   Allows change between Geodetic and plane modes of display input and computation.
F10   Allows selection of reported horizontal and elevation units.
sF1   Allows the user to shell to a DOS prompt.
cF1   Always turn on Report files from onset.
sF2   Begins area computation by station name selection.
sF4   Open/Close log files (toggle).
cF4   Execute log file.
aF4   Edit log file.
sF5   Define field note .FN files (no extension). If file exists information appended to it.
cF5   Creates a binary COR file for use with CERB.
sF9   Round the output bearing and distance units to the nearest defined increments.
sF10   NOT or OBS <define extension> to sort remarks and update bearings and distance into REM file.
cF10   Edit the REM file.
(NOTE: s = shift, c = ctrl, a = alt keys)

FUNCTION KEY: F1

The F1 Function key brings up the on-line help narrative.

Function Key: F2

Effect: Saves all coordinates computed.

Notes: Coordinates computed using geometry routines are not
        automatically saved to disk. They are maintained in memory
        during the particular CSTUF work session. It is a good idea
        to save your work periodically. You are also prompted to save
        when you try to exit, but a power outage or reboot will
        result in unsaved work. If you are experimenting and do NOT
        want to save points you can Exit without saving.

Function Key: F3

Effect: Allows the user to exit from CSTUF

Notes: When executed a dialog box will open giving the user the
        opportunity to: Exit with save, Exit without save, or
        Cancel to return to CSTUF.

Function Key: F4

Effect: Allows the user to toggle open or closed the CSTUF report file
        'project.CSR'. An input window is opened to allow user notes
        to go into the file which is appended with all data and
        computations while the Report function is open.

Notes: Logging to the report file may be stopped by pressing
        `F4' once again.

        An open log operation is also automatically closed at normal
        exit from `CSTUF'.

Function Key: F5

Effect: Sets the program for geometric computation mode.

Notes: Routines include Plane and Geodetic computations of:
        Traverses, Bearing/Bearing, Bearing/Dist., Dist./Dist. Intersections,
        Two Point Inverse.
        Geodetic Mean bearing midpoint.

CSTUF will automatically select the required routine based on the
presence or absence of input at the prompts. To begin a new routine press `F5'.

First Course		InterSect	Second Course		Type of
Bng.	Dist.	Station	Bng.	Dist.	Computation
ÍÍ					
N	Y	prompts	N	Y	Distance Distance Intersect

CSTUF

N	Y	prompts	Y	N	Bearing Distance Intersect
Y	N	prompts	N	Y	" " "
Y	N	prompts	Y	N	Bearing Bearing Intersect
N	N	no	no		Inverse or MidPoint Comp
Y	Y	no	no		Traverse Mean or Forward

Distance Input Options Syntax:
ÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄ
Additional options are available at the distance prompt. These allow
distance recall, simple math operations on a distance and changing
units. Response can consist of two parts: a distance and a modifier.
Below are examples of acceptable `distance' and acceptable `modifiers'.

º Bad syntax (spaces or colons)º

Example #	User reply	ÇÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄ¶
1	5281.32 /2	º HV_2 :NEX_S16 (space) º
2	40.01 ch	º HV_2: NEX_S16 (space) º
3	HV_2:HV_1	º CORNER_1:CORNER 2 (space) º
4	HV_2:HV_1 /2	º CORNER:2:CORNER_1 (colon) º
5	HV_2:HV_1 +66	ÈÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ¼

In the list above, examples #1 and 2 produce the same result; an input
distance of 2640.66 U.S. Survey Feet, example 2 also changes the
default display units from survey feet to chains. Examples #3-6 show
how to use an `inverse distance' (distance recall). Note: you CANNOT
use any spaces or colons in the first station name. See bad syntax
examples above right. Legal modifiers begin with one of the following
characters eight characters: +, -, *, /, m, f, i, c, the first 4 being
arithmetic operands and the last 4 being units modifiers.

Bearing Input Options Syntax:
ÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄ
Users may input a bearing code and a bearing, or they may supply an
`inverse bearing' and perhaps a bearing `modifier'.

Bearing modifiers consist only of algebraic modifiers (+, -, *, /).
The rules for these algebraic modifiers are the same as before. If you
use one of them, you MUST supply a real number afterwards. This real
number is interpreted as a HP-format angle (i.e. dd.mmsss), and the
appropriate function is applied to the angular portion of the user
input. Examples of responses to bearing prompts are shown below:

Good:	Bad:
HV_2:HV_1 /2	HV_2:HV_1 / 2
COR_2:COR_1 +45.30	COR_2:COR_1 +COR_3:COR_4

Function Key: F6

Effect: Allows the user to list a series of points with either
       geographic or state plane coordinates.

Notes: Points may be listed individually by station name, or by a
       range. It is important to note that station names in CMM are

alpha numeric and the sort order of a range 1-2 WILL include
stations named 10 11 100 1000, 123456, etc. In CSTUF ranges
are defined with a single response with a `-' between end names.
Whether geographic or state plane coordinates are listed is
dependent on the Geodetic/Plane Mode selected.

A range of 0-Z will select all station names.

Function Key: F7

Effect: Allows the user to add new stations or points to the .COR file.
May be entered in Geodetic or Plane mode depending on the
status of F9.

Notes: At the command line prompt enter the new station name.
Next, enter the coordinates as prompted. New stations will
be added to memory and will only be stored to disk once you
execute a `F2' Save or `F3 Exit with Save'.

Exit Input routine by selecting any other option.

Function Key: F8

Effect: Allows the deletion of stations.

Notes: Enter station name of the point to be deleted on the command
prompt line. The station and its coordinates will be deleted
from memory. These deletions will not be reflected in the
.COR file on disk until the `F2' Save or `F3 Exit with Save'
are executed.

Caution should be exercised in deleting Ranges due to the
aphanumeric nature of station names a range of 1-2 will also
include stations named 10, 15, 123, 12345, etc. It is wise to
test the range with `F6' LIST to assure the proper selection.

Function Key: F9

Effect: Allows change between Geodetic and Plane modes of display
input and computation.

Notes: When executed a dialog box opens with the options of
`Geodetic' or `Plane' mode. This option may be executed
at any time.

Function Key: F10

Effect: Allows selection of reported horizontal and elevation units.

Notes: Sequentially opens two dialog boxes to allow the user to

select displayed units within CSTUF. Options are:

  M For Metric units.
  F For ft. representing U.S. Survey foot 1200/3937 mtr exact
  I For If representing the international foot.
  C For Ch representing Chains (based on US Survey Foot).
       the legal unit of the PLSS.

Function Key: <SHIFT>F1

Effect: Allows the user to shell to a DOS prompt.

Notes: Any shell operation loads a second copy of the DOS command
    processor and gives you a DOS prompt. This is useful to
    allow the user to copy, rename or delete files or run
    personnal utilities. Because CSTUF and UTCOMM may still be
    in RAM, there are limitations on how much RAM is available
    to any application you may attempt to run.

    Return to CSTUF by typing EXIT (enter). There is no indication
    that you are shelled out of CSTUF, it is wise to keep track.

Function Key: <SHIFT>F2

Effect: Begins area computation by station name selection.

Notes: Type in consecutive point names to enclose the area
    requested. After the last point name has been entered,
    you must re-enter the initial point to execute the
    area computation.

    Several areas are computed, including Plane (Grid surface)
    area, Area corrected for Average scale factor, and Area
    corrected for grid scale factor and elevation factors which
    represents ground area. True geodetic area is not implemented
    but these results are very close.

Function Key: <SHIFT>F4   Open/Close log file (toggle)
            <CONTROL>F4 Execute log file
            <ALT>F4   Edit log file

Effect: Log functions allow users to record and play-back keystrokes.

Notes: To begin logging keystrokes, a user would press <SHIFT>F4,
    and type in the file name where the data will be stored.
    From that point on, until <SHIFT>F4 was pressed again,
    every key pressed by the user will be stored in the log file.

    To execute or edit a log file, press <CONTROL>F4 or <ALT>F4,
    respectively.

CSTUF

Function Key: <CONTROL>F5

Effect: Creates a binary COR file for use with CEFB.

Notes: This version is very rudimentary. The binary COR file
(project.CR) created by this function contains four fields:
Point ID, X, Y, and Z. The Point ID is an eight character
alpha-numeric, and X, Y, Z   are all double precision floating
point numbers. All point ID's in the original file that are
longer than eight characters are truncated!!!!

RAWW

To run RAWW: From the WinGMM main window menu, select "Command/Data Quality Tools/ Raw data Closures (RAWW)"
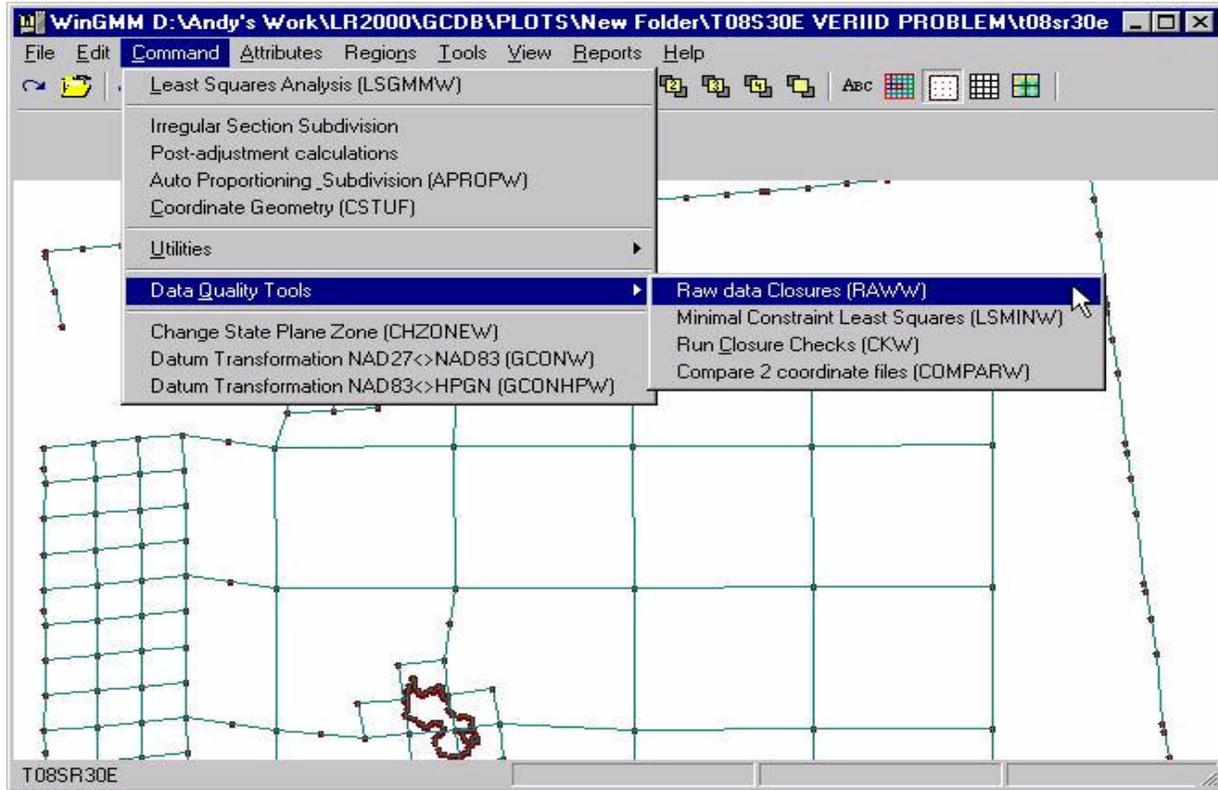
Purpose of RAWW: RAWW is used to create a special .LSA file that contains unadjusted coordinates. View can then be used to get a graphic of the unadjusted plat data, with the control points superimposed upon it. In addition, an ASCII report of misclosures and data that doesn't make sense (points in .CON file not found in .RAW file, etc.) is produced. RAWW is a powerful tool for detecting major data entry blunders such as incorrect Point identifiers on control. For a more comprehensive discussion of RAWW file output, refer to the WinGMM User Guide – GCDB Collection Procedures, Blunder Detection Tools and Strategy.

Required files:	.LSA	RAWW uses one coordinate and all plat data
	.DEF	Zone information
Optional files:	none	
Output files:	RAW.LSA	This file can be viewed graphically.
	.RCL	ASCII file of misclosures and unusual data

What happens: RAWW finds the first control point in the .LSA file and builds the township up from that point, adding each line to the end of existing lines until all lines have been added. There are of course several coordinates

RAWW

for certain corners, with each redundant coordinate in the township given an arbitrary but unique ID; CLOS1, CLOS2, CLOS3, and so on. The control points are then appended to the .LSA file so that they will be superimposed onto the township for the user to see while looking at the graphics in View.

In WinGMM to view RAW.LSA in PROJECW create a new project named RAW. Select this project from the open project menu and the raw data will be displayed. This RAW project can be used to view the RAW.LSA from any project where the user has executed RAWW. If there are multiple townships in the same folder the data for the previous project will be overwritten when RAWW is executed.

User response: RAWW has no prompting

DXFW

To run DXFW: From the WinGMM main window menu, select "File/Export/Drawing Interface Format (DXFW)"
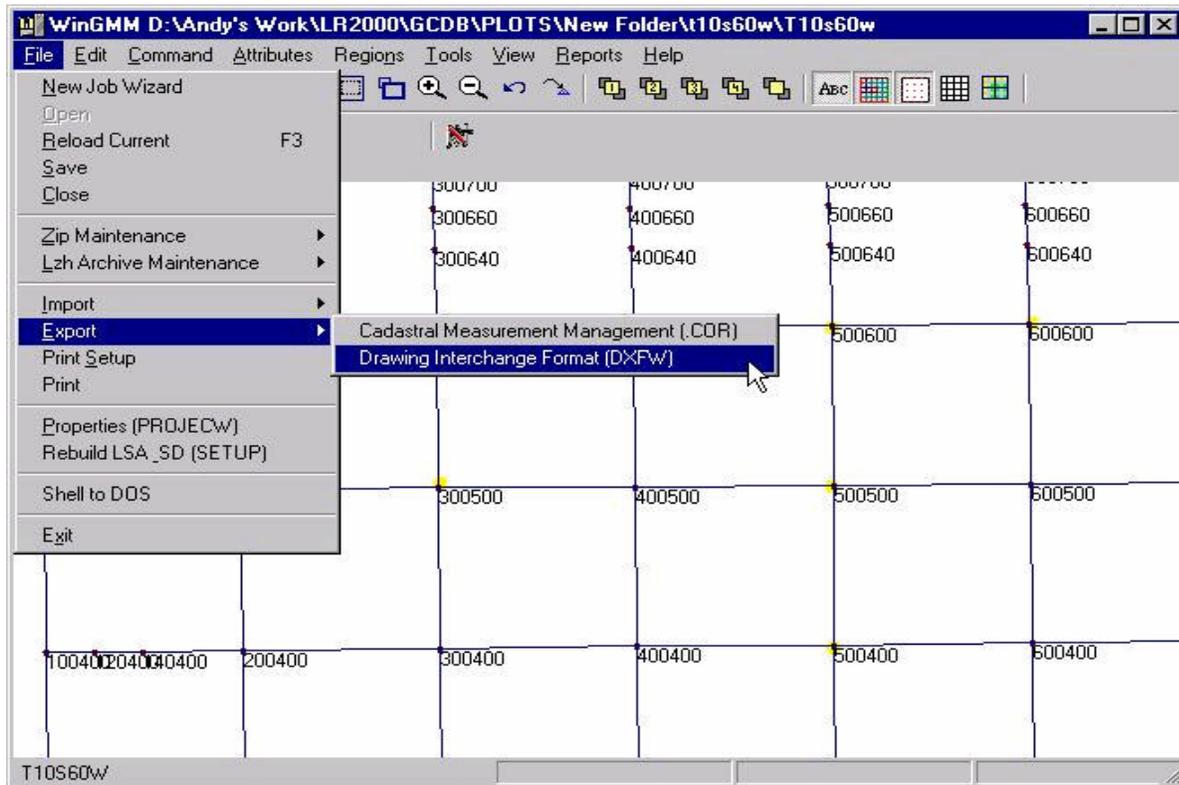
MAIN PROGRAM FEATURES

Purpose of DXFW:

> DXFW creates a drawing file that can be read by many graphic packages. AutoCAD and AutoSketch can read the graphic data in these files, producing a drawing that can be viewed, edited, plotted and printed.

> Choosing menu selection (2) now allows the user to select the line or polygon file to be used for input.

> NOTE: Menu items displayed depend on the menu item that is active. For instance, by selecting (1) COORDINATES READ FROM (ADJUSTED .COR FILE), and then (3) ADJUSTED .UTM FILE, the new menu selection displayed will be (1) COORDINATES READ FROM (ADJUSTED .UTM FILE)

> DXFW converts the township lines, subdivision lines, record brg/dist annotation, error ellipses, control points and polygons, based on the selections made.

Required files: .LSA, .CON, .RAW

Optional files: .COR, .UTM, .ADJ, .LXN, .INT, .RPO and .IID (depending on menu choices made)

Output files: .DXF   A text file with codes representing all of the graphic information of the project.

.DXF.STF   This file contains coding that tells DXFW what setting to use.

DXFW OPTION MENU (ZERO SIZE MEANS NONE)

The output of this can be plotted on USGS quad maps.

(1) COORDINATES READ FROM ADJUSTED .COR FILE
1
DO YOU WANT COORDINATES READ FROM
(1) ADJUSTED COORDINATE .COR FILE
(2) INPUT MEASUREMENT .LSA FILE
(3) ADJUSTED .UTM FILE
   PICK A # <1>

(1) ADJUSTED COORDINATE .COR FILE

The corners will be displayed at their fully adjusted state plane coordinate points. The results of APROPW or AUTOI will be represented in the drawing if those programs were run since the last adjustment.

When polygons line types are selected this option is unavailable.

(2) INPUT MEASUREMENT .LSA FILE

The corners will be displayed at the coordinate points derived from GEN or LSGMMW, whichever has been executed last. Annotation will include the .RAW file (unadjusted) bearings and distances. SID's are coded by layers on each line drawn.

The output from this can be plotted on BLM 1:100000 maps.

(3) ADJUSTED .UTM FILE
The corners will be displayed at their fully adjusted UTM coordinate points. Any error ellipses will be displayed in meter units. Annotation will include the .RAW file (unadjusted) bearings and distances.

The .LSA file does not have unsurveyed subdivision lines.

This feature gives the user the opportunity to use other line and polygon files.

(2) LINES READ FROM MEASUREMENT .LSA FILE
DO YOU WANT
(1) LINES DRAWN FROM .LSA FILE
(2) LINES DRAWN FROM .LXN FILE
(3) LINES DRAWN FROM POLYGON .INT FILE
(4) NO LINES DRAWN
(5) LINES DRAWN FROM RAW .RPO POLYGONS
(6) LINES DRAWN FROM FINAL .IID ATTRIBUTED POLYGONS
(7) LINES FROM BOTH RAW .RPO AND .IID POLYGONS

PICK A # <1>

(1) LINES DRAWN FROM .LSA FILE

Only lines entered in the .RAW file will be included in the drawing. Lines are separated onto different layers according to SID value.

(2) LINES DRAWN FROM .LXN FILE

All lines in the .RAW file and those created by APROPW will be included in the drawing.

(3) LINES DRAWN FROM POLYGON .INT FILE

Polygons created by APROPW are included in the drawing.

(4) NO LINES DRAWN

Only the points and their IDS will be in the drawing.

(5) LINES DRAWN FROM RAW .RPO POLYGONS

Polygons created from the .RPO file for editing in GLINK. Refer to *WinGMM User Guide-GCDB Collection Procedures, WinGMM* LINK (GLINK) PROCESS.

(6) LINES DRAWN FROM FINAL .IID ATTRIBUTED POLYGONS

Polygons created from the .IID file for editing in GLINK. Refer to *WinGMM User Guide-GCDB Collection Procedures, WinGMM* LINK (GLINK) PROCESS.

(7) LINES FROM BOTH RAW .RPO AND .IID POLYGONS

Combines .RPO and .IID polygons into one DXF file.

These menu items do not work when polygon line types are selected.

Choosing (2) or (3) gives option of where to draw error ellipses from.
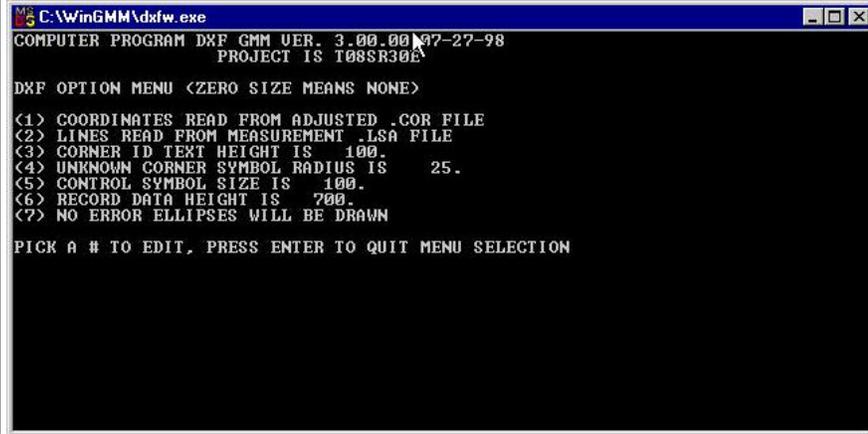
(3)CORNER ID TEXT HEIGHT IS (100)

INPUT STATION NAME TEXT HEIGTH IN GROUND UNITS <100 IS TYPICAL>
ZERO IF NO TEXT IS DESIRED <100>
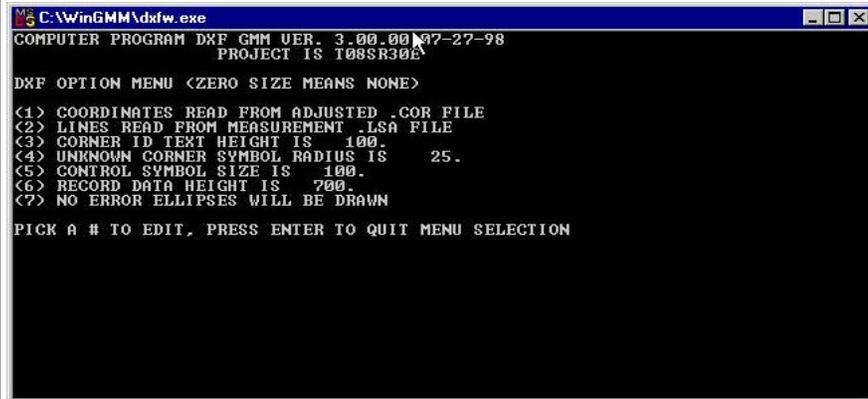
(4) UNKNOWN CORNER SYMBOL RADIUS IS (25)

INPUT UNK. STATION SYMBOL RADIUS <25 IS TYPICAL>
ZERO IF NONE DESIRED <25>

```
C:\WinGMM\dxfw.exe                                          _ □ ×
COMPUTER PROGRAM DXF GMM VER. 3.00.00 07-27-98
                  PROJECT IS T08SR30E

DXF OPTION MENU <ZERO SIZE MEANS NONE>

<1> COORDINATES READ FROM ADJUSTED .COR FILE
<2> LINES READ FROM MEASUREMENT .LSA FILE
<3> CORNER ID TEXT HEIGHT IS    100.
<4> UNKNOWN CORNER SYMBOL RADIUS IS      25.
<5> CONTROL SYMBOL SIZE IS    100.
<6> RECORD DATA HEIGHT IS     700.
<7> NO ERROR ELLIPSES WILL BE DRAWN

PICK A # TO EDIT, PRESS ENTER TO QUIT MENU SELECTION
```

(5) CONTROL SYMBOL SIZE IS   (750)

INPUT CONTROL SYMBOL SIZE <100 IS TYPICAL>
ZERO IF NONE DESIRED <100>


```
C:\WinGMM\dxfw.exe                                          _ □ ×
COMPUTER PROGRAM DXF GMM VER. 3.00.00 07-27-98
                  PROJECT IS T08SR30E

DXF OPTION MENU <ZERO SIZE MEANS NONE>

<1> COORDINATES READ FROM ADJUSTED .COR FILE
<2> LINES READ FROM MEASUREMENT .LSA FILE
<3> CORNER ID TEXT HEIGHT IS    100.
<4> UNKNOWN CORNER SYMBOL RADIUS IS      25.
<5> CONTROL SYMBOL SIZE IS    100.
<6> RECORD DATA HEIGHT IS     700.
<7> NO ERROR ELLIPSES WILL BE DRAWN

PICK A # TO EDIT, PRESS ENTER TO QUIT MENU SELECTION
```

(6) RECORD DATA HEIGHT IS   (0)

INPUT RECORD DATA TEXT HEIGTH <700>
ENTER ZERO IF NO DATA TEXT DESIRED>


```
C:\WinGMM\dxfw.exe                                          _ □ ×
COMPUTER PROGRAM DXF GMM VER. 3.00.00 07-27-98
                  PROJECT IS T08SR30E

DXF OPTION MENU <ZERO SIZE MEANS NONE>

<1> COORDINATES READ FROM ADJUSTED .COR FILE
<2> LINES READ FROM MEASUREMENT .LSA FILE
<3> CORNER ID TEXT HEIGHT IS    100.
<4> UNKNOWN CORNER SYMBOL RADIUS IS      25.
<5> CONTROL SYMBOL SIZE IS    100.
<6> RECORD DATA HEIGHT IS     700.
<7> NO ERROR ELLIPSES WILL BE DRAWN

PICK A # TO EDIT, PRESS ENTER TO QUIT MENU SELECTION
```

(7) NO ERROR ELLIPSES WILL BE DRAWN
    (1) ERROR ELLIPSES WILL NOT BE DRAWN
    (2) ERROR ELLIPSES WILL BE DRAWN AS DIAMONDS

       ENTER ERROR ELLIPSE MULIPLIER <1.0>

      (1) LEAST SQUARES .ADJ FILE OR
      (2) COORDINATE .PGC FILE
    (3) ERROR ELLIPSES WILL BE DRAWN

ENTER ERROR ELLIPSE MULIPLIER <1.0>

(1) LEAST SQUARES .ADJ FILE OR
(2) COORDINATE .PGC FILE

Pressing [CR] causes a
DXFW *file to be generated*
based on the selections
made.

PICK A # TO EDIT, PRESS ENTER TO QUIT MENU SELECTION
[CR]

DXFW

CKW

To run CKW: From the WinGMM main window menu, select "Command/Data Quality Tools/Run Closure Checks (CKW)"
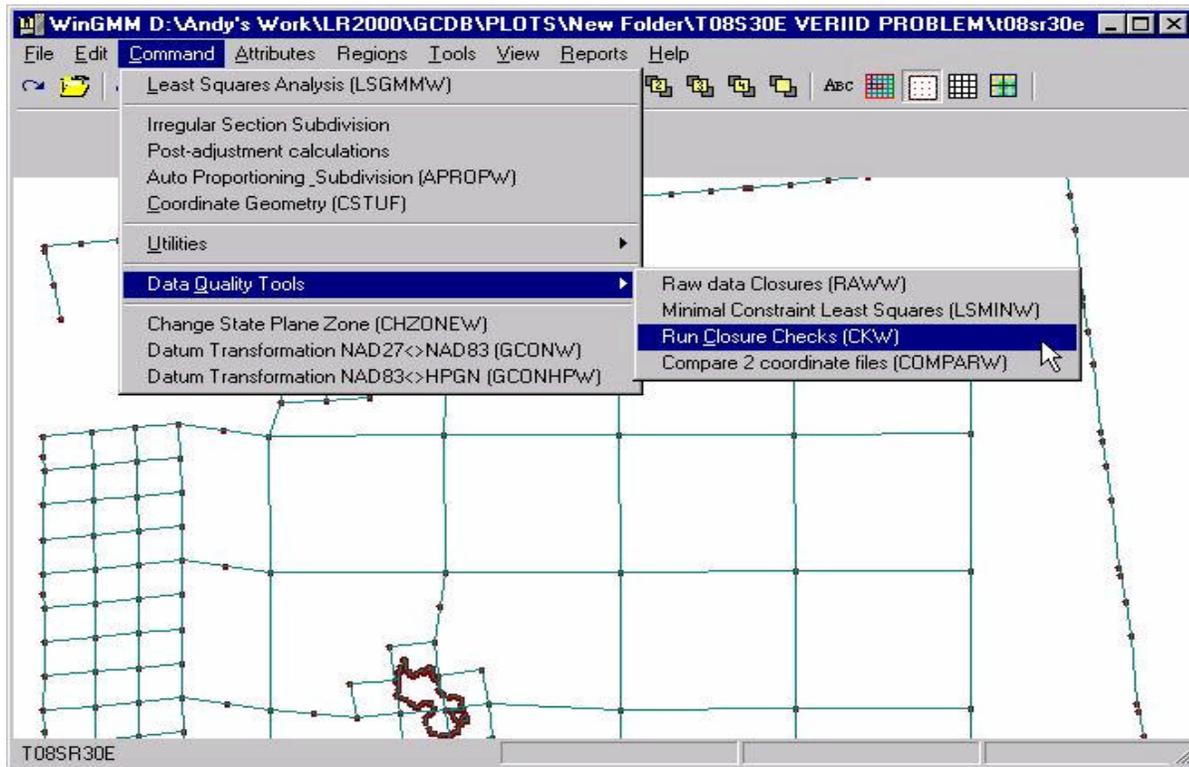
Purpose of CKW:	CKW is used to calculate section misclosures.

Required files:	.RAW	Checker uses the plat data
	.COR	This file must be present

Optional files:	none

Output files:	.CHK	A readable report of misclosure data

What happens: When CKW is invoked, it analyzes the geometric inconsistencies of just the plat data by traversing around each section.

User response: CKW asks if there are additional loop closures after it has exhausted what it can calculate automatically. If the user answers yes to this prompt, then CKW will then prompt for ID numbers which define the polygon being analyzed for closure.

The user will interpret the .CHK file to track down obvious data entry blunders. Refer to *WinGMM Technical Reference Manual* in the chapter on Blunder Detection and in the chapter on Refining Error Estimates for discussions on how to interpret the .CHK file.

CKW SCREEN

```
C:\WinGMM\ckw.exe                                                    _ □ ✕
***********************
TRAVERSE CLOSURE REPORT FOR SECTION 12
SUM OF DISTANCES ALONG TRAVERSE I        4.00 MILES
CLOSURE IN NORTHING  (Y) =        -1.8 FT.
CLOSURE IN EASTING   (X) =       -24.8 FT.
LINEAR ERROR OF CLOSURE IS        24.9 FT.
STANDARD PRECISION IS 1/          848.
STATIONS IN TRAVERSE
600500-600600-700600-700500-600500-

***********************
TRAVERSE CLOSURE REPORT FOR SECTION  1
SUM OF DISTANCES ALONG TRAVERSE IS       4.00 MILES
CLOSURE IN NORTHING  (Y) =        41.1 FT.
CLOSURE IN EASTING   (X) =        15.2 FT.
LINEAR ERROR OF CLOSURE IS        43.8 FT.
STANDARD PRECISION IS 1/          481.
STATIONS IN TRAVERSE
600600-600640-600660-600700-700700-700660-700640-700600-600600-

 36 SECTION LOOP CLOSURES HAVE BEEN AUTOMATICALLY IDENTIFIED

DO YOU WANT ANY ADDITIONAL CLOSURES CALCULATED <Y/N> <N>?
```

COMPUTER PROGRAM **CK** *WinGMM* DOS & AIX 2.04.00   05-18-95

     PROJECT NAME IS T03NR17E

****
TRAVERSE CLOSURE REPORT FOR SECTION 31
SUM OF DISTANCES ALONG TRAVERSE IS   4.00 MILES
CLOSURE IN NORTHING (Y) '   -43.6 FT.
CLOSURE IN EASTING   (X) '   51.2 FT.
LINEAR ERROR OF CLOSURE IS   67.3 FT.
STANDARD PRECISION IS 1/   314.
STATIONS IN TRAVERSE
100100-100200-120200-140200-200200-200100-140100-120100-100100-

****

CHECKER reports closures for all of the sections.

****
TRAVERSE CLOSURE REPORT FOR SECTION 1
SUM OF DISTANCES ALONG TRAVERSE IS   4.01 MILES
CLOSURE IN NORTHING (Y) '   -3.1 FT.
CLOSURE IN EASTING   (X) '   9.9 FT.
LINEAR ERROR OF CLOSURE IS   10.4 FT.
STANDARD PRECISION IS 1/   2042.
STATIONS IN TRAVERSE
600600-600700-700700-700660-700640-700600-660600-640600-600600-

 36 SECTION LOOP CLOSURES HAVE BEEN AUTOMATICALLY IDENTIFIED

DO YOU WANT ANY ADDITIONAL CLOSURES CALCULATED (Y/N) <N>

INPUT INITIAL STATION (ENTER IF FINISHED)
200200
POSSIBLE NEXT STATIONS
  1) 200100
  2) 200300
  3) 300200
  4) 140200
PICK THE # ASSOCIATED WITH THE NEXT STATION (ZERO TO QUIT)
4
NEXT STATION IS 140200
NEXT STATION IS 120200
NEXT STATION IS 100200
POSSIBLE NEXT STATIONS
  1) 100100
  2) 100300
PICK THE # ASSOCIATED WITH THE NEXT STATION (ZERO TO QUIT)
2
NEXT STATION IS 100300
POSSIBLE NEXT STATIONS
  1) 100400
  2) 120300
PICK THE # ASSOCIATED WITH THE NEXT STATION (ZERO TO QUIT)
2
NEXT STATION IS 120300
NEXT STATION IS 140300
NEXT STATION IS 200300
POSSIBLE NEXT STATIONS
  1) 200200
  2) 200400
  3) 300300
PICK THE # ASSOCIATED WITH THE NEXT STATION (ZERO TO QUIT)
1
NEXT STATION IS 200200

TRAVERSE CLOSURE REPORT
SUM OF DISTANCES ALONG TRAVERSE IS   4.00 MILES
CLOSURE IN NORTHING (Y) '   14.4 FT.
CLOSURE IN EASTING   (X) '   41.3 FT.
LINEAR ERROR OF CLOSURE IS   43.7 FT.
STANDARD PRECISION IS 1/   483.
STATIONS IN TRAVERSE
200200-140200-120200-100200-100300-120300-140300-200300-200200-
INPUT INITIAL STATION (ENTER IF FINISHED)

───

CKW

COMPARW

To run COMPARW: From the WinGMM main window menu, select "Command/Data Quality Tools,/Compar 2 coordinate files (COMPARW)"
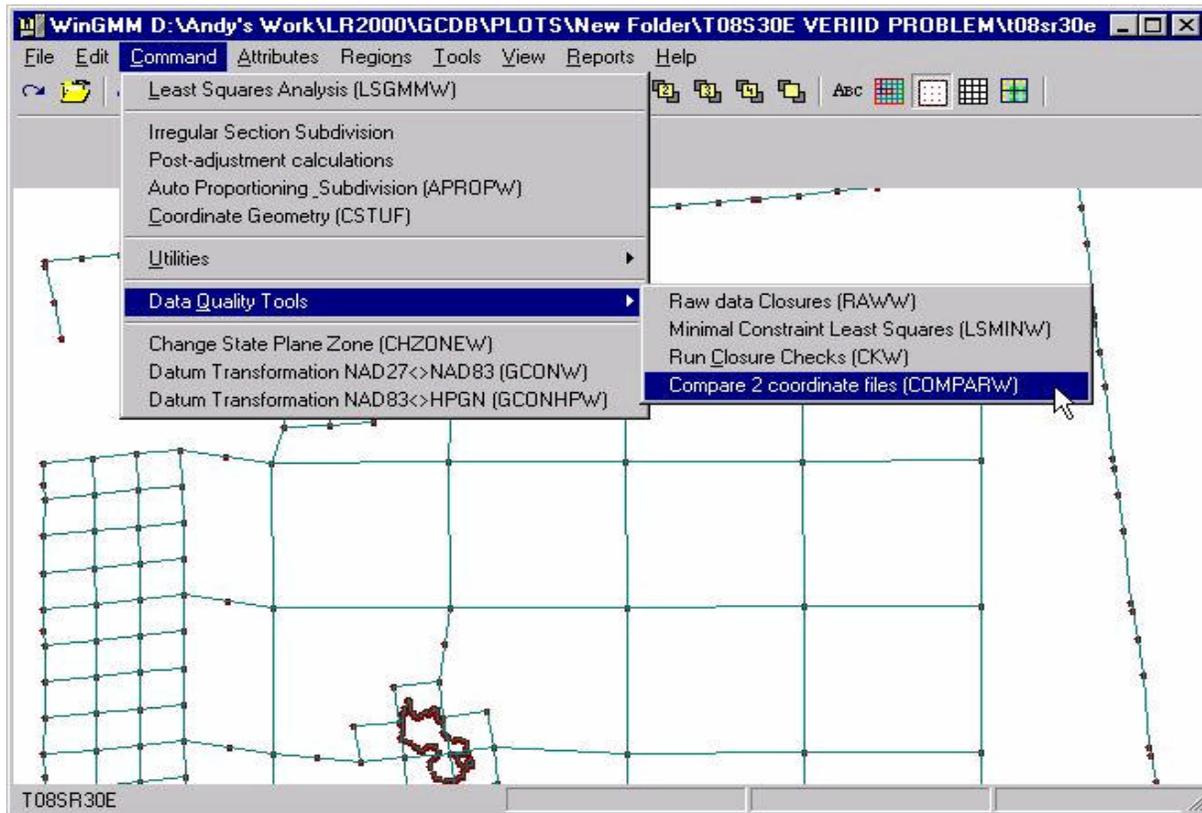
Purpose of COMPARW:	COMPARW is used to compare the content of two .COR files or of two .PGC files. The textual report lists difference in distance between two different coordinates of the same points.
Required files:	two .COR files of the same project, or two .PGC files of the same project
Optional files:	none
Output files:	User-defined filename
What happens:	When COMPARW is invoked, it matches up GCDB IDS between the two files and subtracts the coordinates to arrive at the difference in position, both X and Y.
	COMPARW forms a list of the matched IDS with their X and Y distance differences, in feet.
User response:	COMPARW has no prompting. The user interprets the user named file to see how two different adjustment strategies compare.
Prompting:	Filename are prompted for inside the program.

　　　COMPARW SCREEN
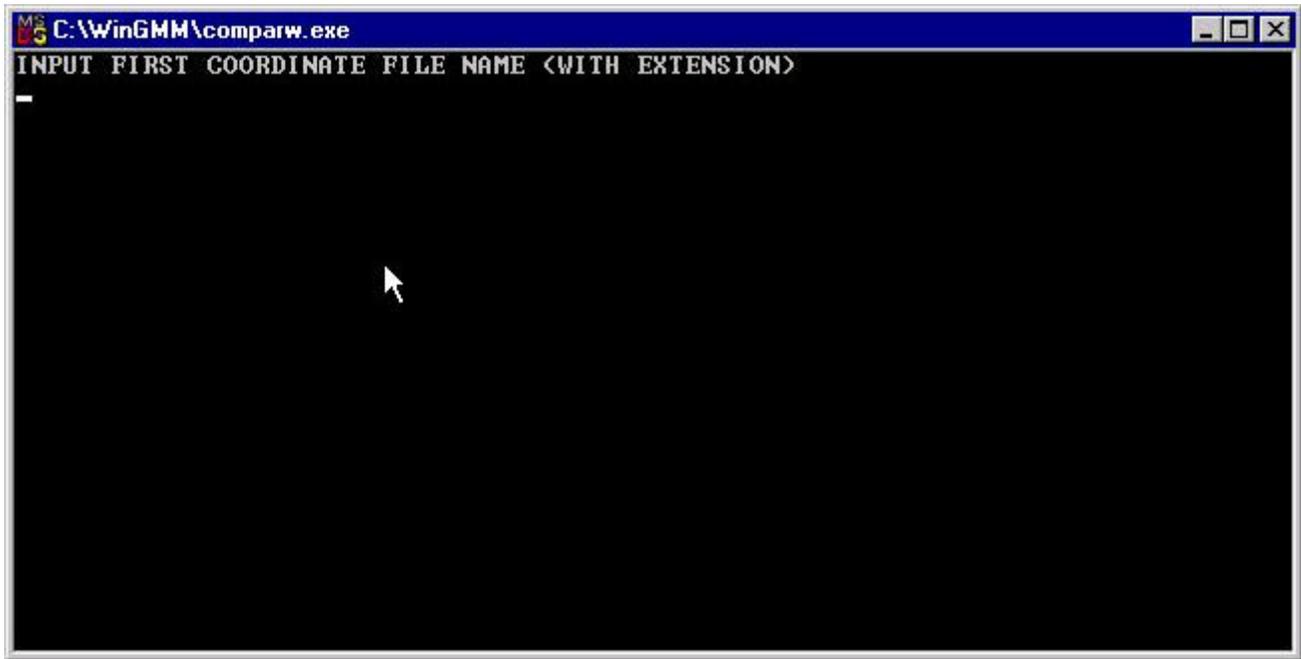
INPUT FIRST COORDINATE FILE (WITH EXTENSION)
T03NR17E
INPUT SECOND COORDINATE FILE (**WITH EXTENSION**)
TEMP
INPUT OUTPUT FILE NAME (WITH EXTENSION)
TEMP.CMP
 FILE T03NR17E.COR   MINUS FILE TEMP.COR
STATION   N (Y) DIFF. E (X) DIFF.
100100   -.463   .214
100200   -.263   .148
100300   .217   .075
100400   .011   -.135
.
.
.
700200   -.106   .081
700203   -.109   .079
700500   -.329   -.083
700600   -.454   -.137
700640   -.469   -.167
700660   -.473   -.180
700700   -.483   -.193
 136 COORDINATE PAIRS HAVE BEEN COMPARED
Stop - Program terminated.

QCMAT

To run QCMAT: From the WinGMM main window menu, select "Regions/QC Region Match (QCMAT)"
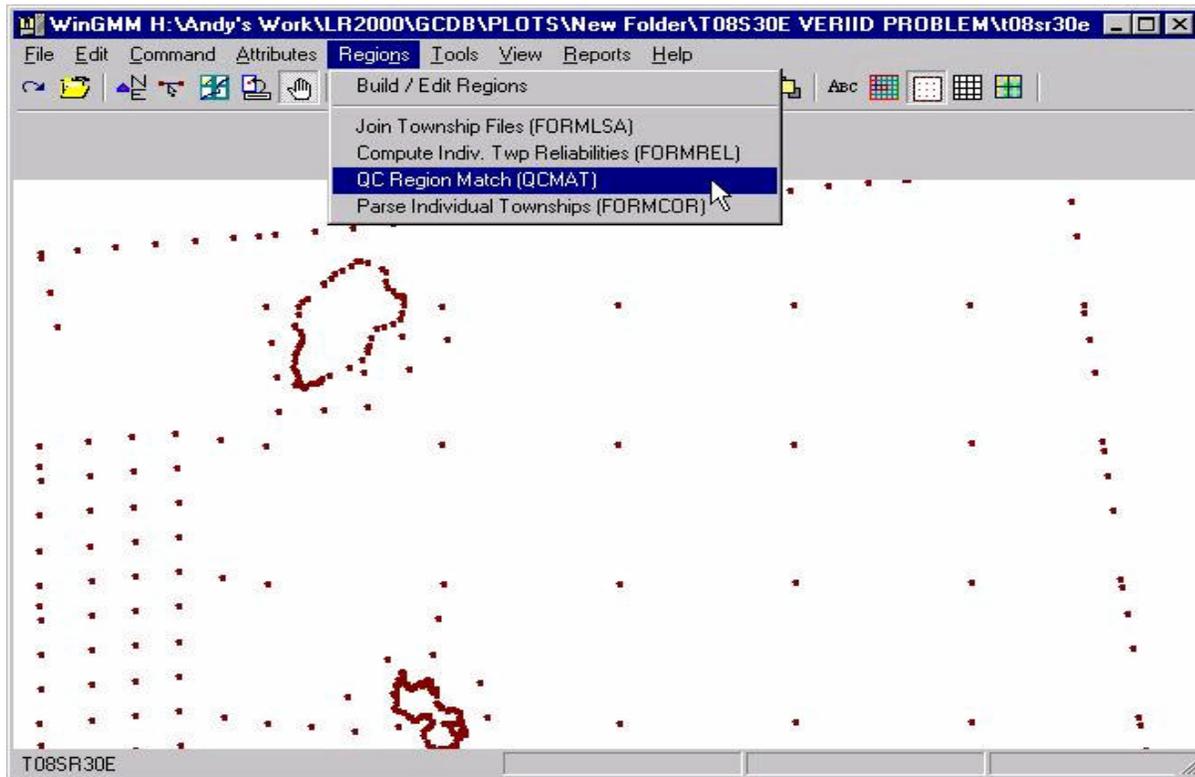
MAIN PROGRAM FEATURES

Purpose of QCMAT: QCMAT reports the successes of the .MAT file in a format that can be viewed spatially.

Required files: Region.LSA   Distance, angle, bearing, control point measurement and
                                                                          Calculated cords.
                        Region.MAT   Point IDs listed with the IDs as used in the regional adjustment.
                          Region.SD   Error estimates for distance, angles, bearing, control point
                                                    cords.

Optional files: None

Output files: QC.LSA   Coords. The distances and bearing in this file do
                                                  Not apply.
                        QC.COR   Coords of all points in the region.
                        QC.INF   Report on the quality check of the MAT file.

Prompting: None

What happens: QCMAT creates a project called QC that provides a different and useful view of the
                        region. It is a quality check on the successful creation of the MAT file. It provides a
                        view of which lines were matched up and which points are being held fixed.

There is no user interaction in QCMAT. The command line screen provides some general reporting data that is
also found in the QC.INP file. The user needs to view the output data spatially, using WinGMM set to QC as the.
                                                                                        QCMAT

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To view QCMATW data in WinGMM: Open QC as the current project. Set LSA lines on, Points on, Control Stations on. Turn Point Names on when zoomed into a trouble area.

What the QC project looks like: All points in the input region will have a point symbol. Points that are imported from adjoining regions are held fixed and appear as control point symbols. If there are no "fixed" points, then QCMAT will choose one control point from the region and only that point will appear as control. All control points subject to adjustment will look like all other points. The boundaries that are common between townships in the region will have lines drawn if all the common points along the boundaries were matched up.

What to look for in the display of the QC project: Look for points along fixed township lines where there is not a control point symbol. If a point is missing, it means that FORMLSA did not match up the points. Look for lines along common township lines for any gaps. If a point did not get matched up, then the lines touching them in the adjustment do not display in the QC project. In addition, all IDs aliases will be written on top of each other at the point.

COMPILATION OF REGIONAL DATA - PART IV

FORMLSA

To run FORMLSA: From the WinGMM main window menu, select "Regions/Joint Township Files (FORMLSA)"
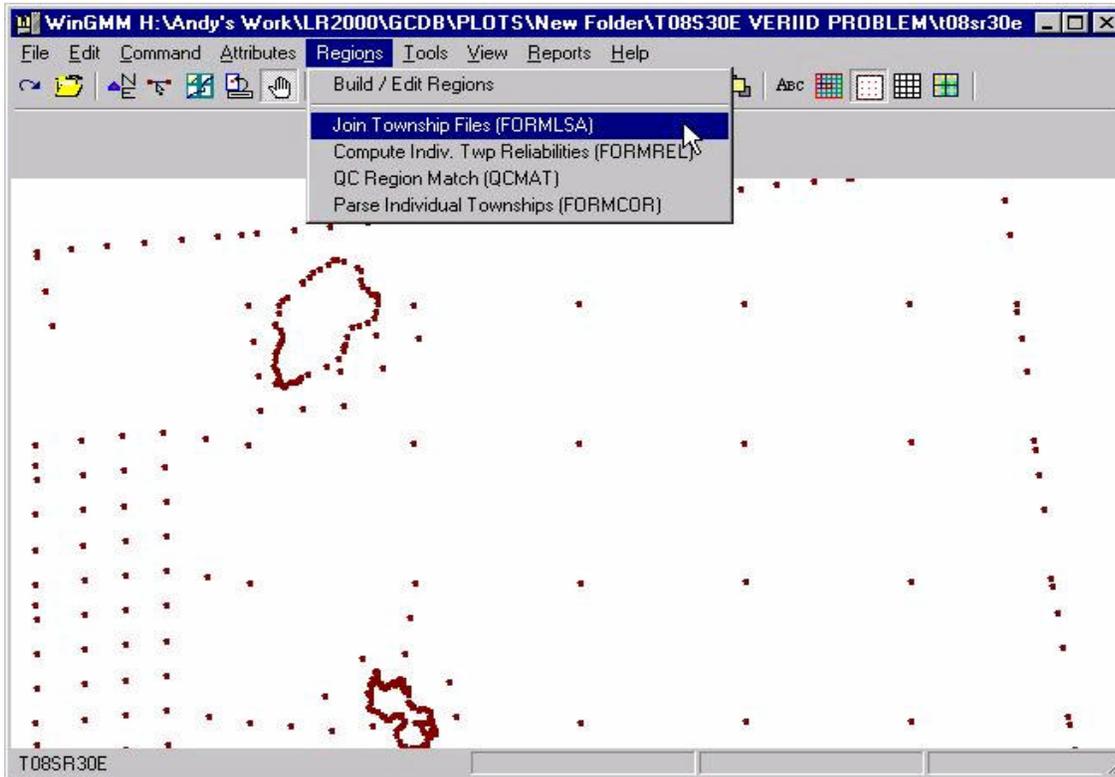
Purpose of FORMLSA: To create multiple township .LSA file and .SD file for multiple township adjustments. The collection of the many townships is referred to as a region. FORMLSA identifies the common lines by coordinates and verified by record.

Input files -	.LSA	files, one for each township
	.SD	files, one for each township
	region.DEF	defaults for the region
	region.HOW	list of townships to combine

Output files -	*region*.MAT	an alias file
	region.LSA	GCDB IDS contain township and range
	region.SD	GCDB IDS contain township and range

What happens: FORMLSA will search in a radius around a coordinate to find the matching corner in an adjoining township. If the coordinate values are outside this radius the program will stop. A prompt at the beginning of FORMLSA asks the user what the search area should be, giving the user a chance to involve more data in the search. The default is 300'. Users have had to use over 3000' to get data to merge, but it is rare that the data set justifies such extremes. In extreme cases it may be necessary to use Merge Control, see *INRAWW, USING INRAWW TO ADD MERGE CONTROL FOR FORMLSA MERGES* and *WinGMM*

FORMLSA

Users Guide – GCDB Collection Procedures, *SOLUTIONS TO COMMON MERGE PROBLEMS (chapter 8).* Merge Control assists FORMLSA in creating the data set for a regional adjustment, without adding actual new control to the region. This is because if control only exists in one township's data it is thrown out by FORMLSA.

User response: FORMLSA asks the user what the search area should be, giving the user a chance to involve more data in the search

FORMLSA SCREEN

INPUT COORDINATE TOLERANCE ON MERGE (300-600 FT IS APPROPRIATE) <300>
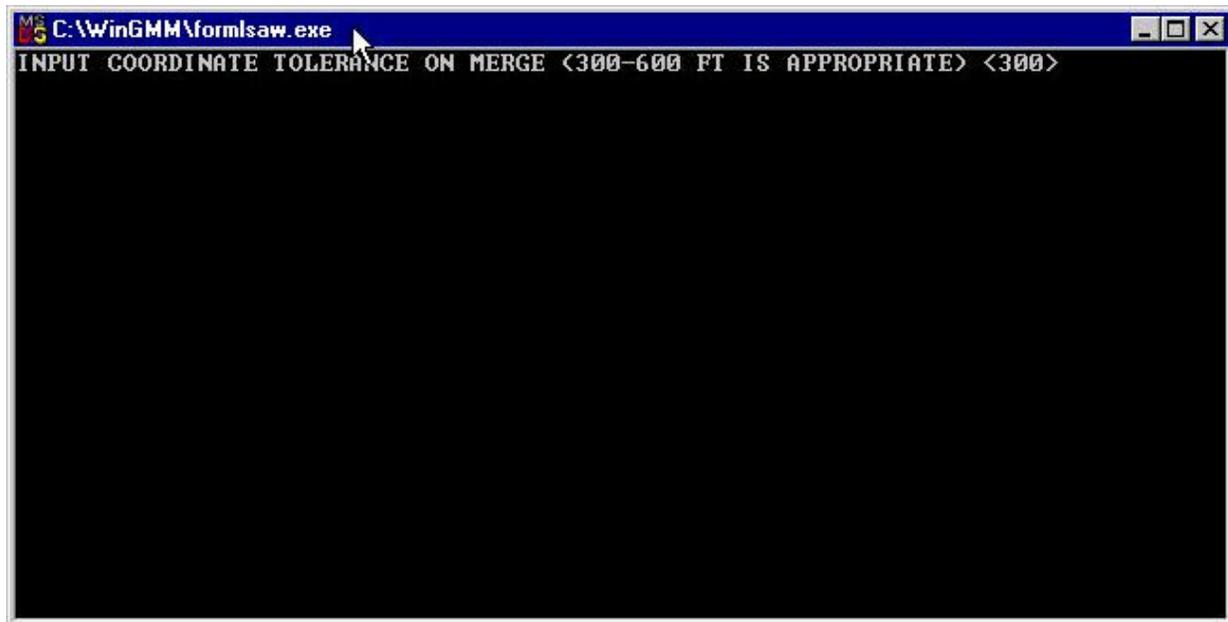
The .HOW file must be created with a text editor prior to running FORMLSA

The .HOW file is a text file list of the townships to be merged. For a complete description of the .HOW file see the WinGMM User Guide - GCDB Collection Procedures, REGIONAL ADJUSTMENT OF DATA.

Since a multi-township adjustment file will be very large, a large version of LSGMMW will be required.

FORMLSA gets control out of the individual .LSA and .SD files. Using CMM's COMBIN concept of "if it is control in one and unknown in another, it becomes an unknown" because it was only held to keep coordinates consistent with some previous work. This is especially true with coordinates imported from an adjacent township, which is done to give coordinates to a township

FORMLSA

that may not have control at all. FORMLSA will properly recognize these imported points as NOT control; the regional adjustment will be performed with only true control.

FORMLSA

FORMCOR

To run FORMCOR: From the WinGMM main window menu, select "Regions/Parse Individual Townships (FORMCOR)"
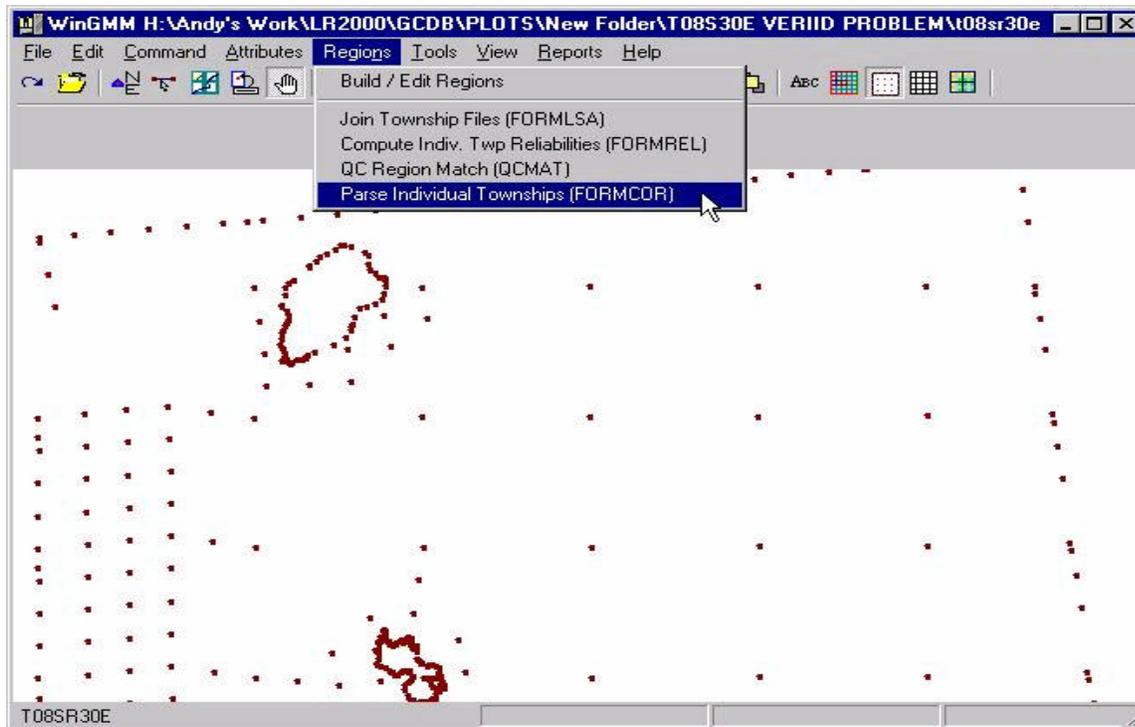
Purpose of FORMCOR: To write out the results of a regional adjustment into the files for the individual townships.

Input files -   *region*.DEF   defaults for region
                                region.MAT   alias file
                                region.PGC   state plane coordinates, lat/long, adjusted

Output files -   .COR   files for each township in adjustment.
                                .GEO   files for each township in adjustment.
                                .PGC   files for each township in adjustment

User response: No user prompting.

For a discussion of multiple township adjustment processes refer to the WinGMM Technical Reference Manual, Regional Adjustment of Data section.

FORMREL

To run FORMREL: From the WinGMM main window menu, select "Regions/Compute indiv.Twp Reliabilities (FORMREL)"

NOTE: Run FORMLSAW prior to running FORMRELW.

Purpose of FORMREL: To calculate the reliabilities of individual townships in a region and write the Results into the files for the individual townships after a regional adjustment that uses fixed boundaries.
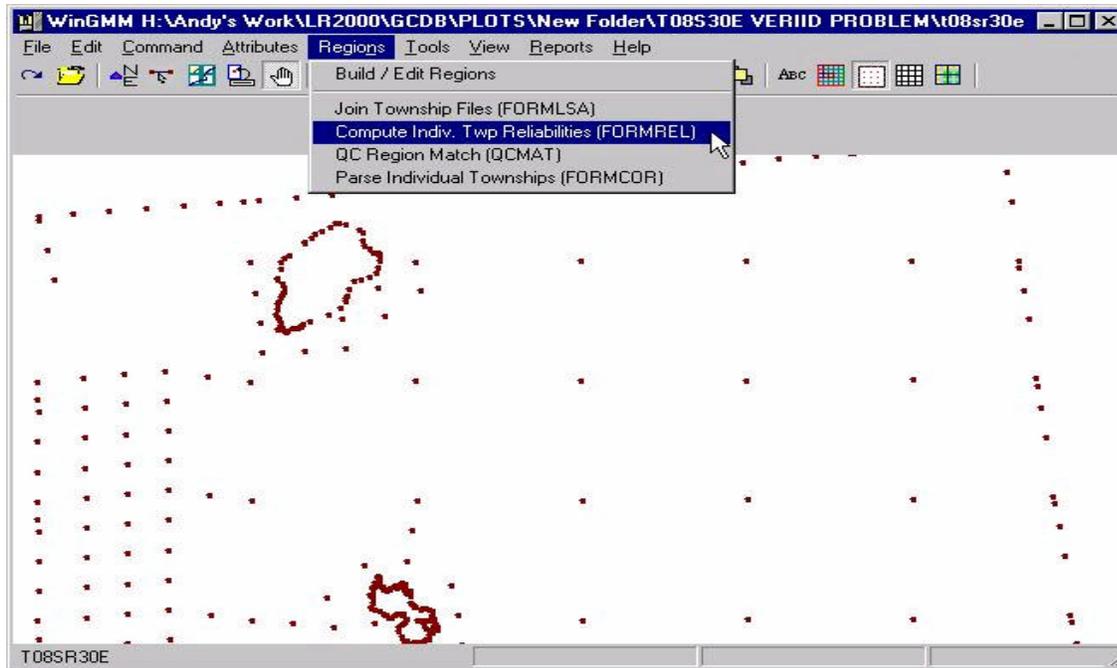
Input files -
region.DEF	defaults for region
region.MAT	alias file
region.PGC	state plane coordinates, lat/long, adjusted
region.LSA	GCDB IDS contain township and range
region.SD	GCDB IDS contain township and range
region.HOW	list of townships to calculate reliabilities for.

Output files -
.PGC   files for each township in adjustment.

.COR   files for each township in adjustment.

.GEO   files for each township in adjustment.

What happens: FORMREL will create .COR, .GEO, and .PGC files for each individual township. Uses the .MAT file created by FORMLSA to associate a township ID with a big adjustment ID. If you computed error analysis in the big adjustment, then these are transferred to the proper .PGC file.

User response: FORMREL has no prompting.

Prompting: There are no user prompts for FORMREL

FORMREL

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For a full discussion of multiple township adjustment processes refer to the WinGMM User Guide - GCDB Collection Procedures, Regional Adjustment of Data.

FORMREL may take some time to calculate reliabilities.

The reliabilities of townships, above the NOREL line, are written to individual *township*.PGC files. The townships below the NOREL line are used in the computations, but their *township*.PGC files are NOT updated.

The .HOW file is a text file list of the townships to be computed. FORMREL requires special file management for some files, including the .HOW file. For a complete description of the .HOW file see the *WinGMM User Guide - GCDB Collection Procedures*, *Regional Adjustment of Data*.

Follow the steps below to setup and run FORMREL. Run FORMREL when error analysis is turned off or fixed boundaries were used. FORMREL calculates reliabilities for each township above the NOREL line in the .HOW file and updates the reliabilities in their .PGC files. If properly setup FORMREL will use the data from ALL townships in the region, including the townships used for the FIXED boundaries, to calculate reliabilities for the target townships.

A) Backup your .COR, .HOW, .LSA, .MAT, and .SD files by renaming them, i.e. .1CO, .1HO, .1LS, .1MA ans .1SD for future use.

B) Reformat your .HOW file to include all townships, by deleting the "FIXED" line from it.

C) Run FORMLSA to create a region that includes all townships being used. Insure that all townships merged correctly.

D) Copy your backup copy of .HOW to .HOW, i.e. copy .1HW to .HOW

E) Run FORMREL.

F) Copy your backup files to their original names.

NOTE: A batch or script routine could be used to backup and restore files.

8) Run **APROPW** on the target townships to update township subdivisions

GETLLD

To run GETLLD: From the WinGMM main window menu, select "Attributes/Import LLD file (GETLLD)"
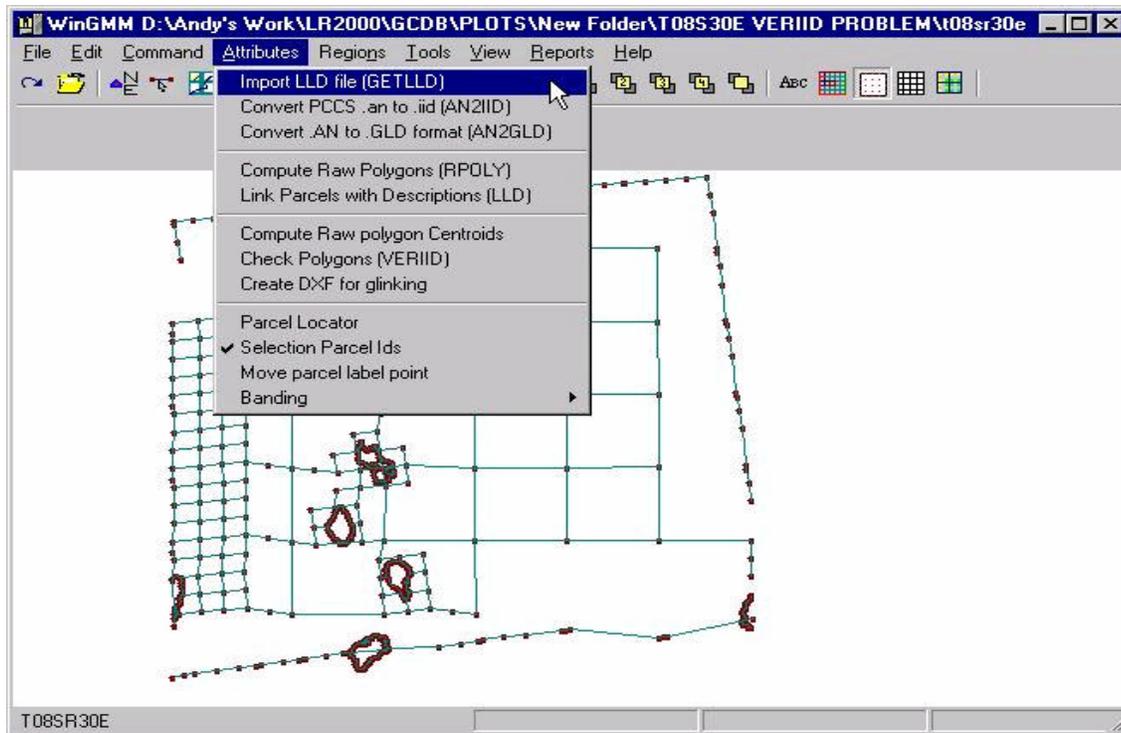
Purpose of GETLLD:	To gather the data in the LLD file concerning lots. To develop elongated section data concerning the direction and extent of elongation.
Required files:	.LLD Contains LR2000 basic parcel definitions.
Optional files:	none
Output files:	.LOT Contains nominal A-P locations deciphered to 1-16, elongation data for both north and south elongation, lot numbers, acreage, survey type, and survey number.
What happens:	When GETLLD is executed, it reads the .LLD file for a township and creates the .LOT file.
User response:	GETLLD prompts for the extent and direction (N, S, E, W) of elongation for each lot, by section number, in townships which contain elongated sections. There are no prompts in GETLLD with townships that do not contain elongated sections.

RPOLY

To run RPOLY: From the WinGMM main window menu, select "Attributes/Compute Raw Polygons (RPOLY)"
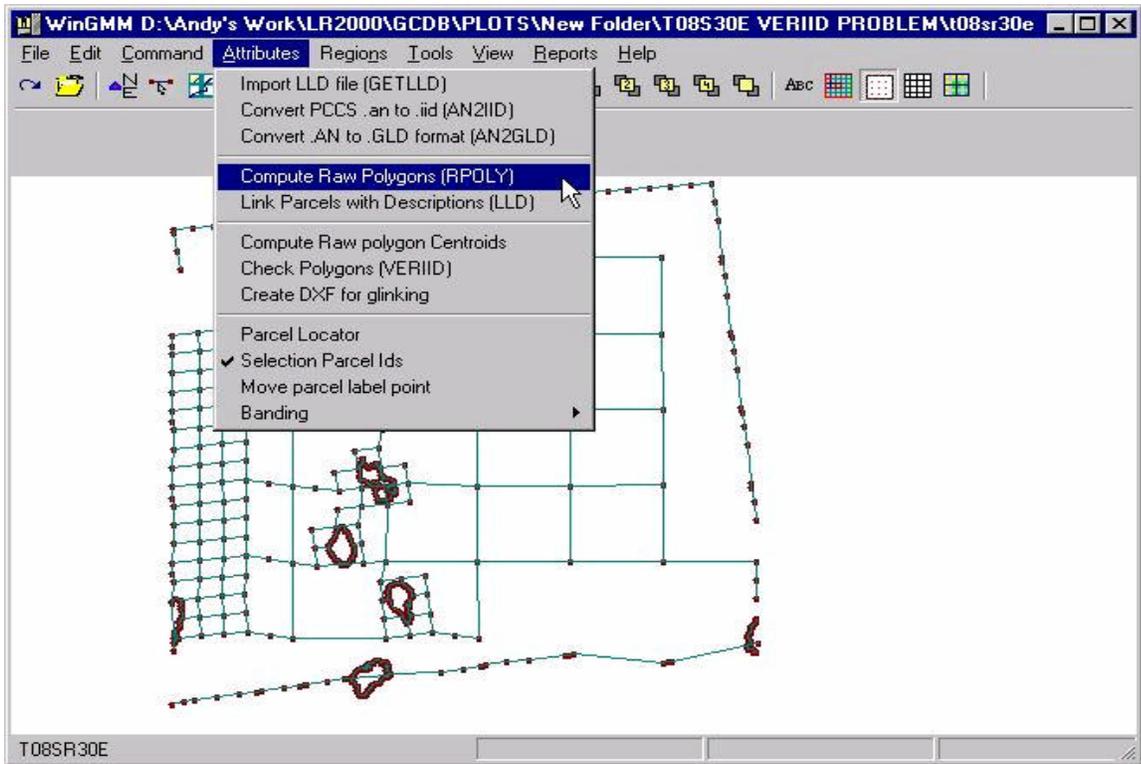
Purpose of RPOLY:	To create polygons from the abstracted data in the .RAW file, and annotate each polygon as S for standard, I for inny, and O for outy.
Required files:	.RAW
Optional files:	none
Output files:	.RPO Contains PID's for polygon's created from abstracted data found in the .RAW file. Polygon PID's are annotated with S for standard, I for inny, and O for outy.
What happens:	When RPOLY is executed, it reads the .RAW file for a township and creates the .RPO file.
User response:	RPOLY has no prompting.

RAW POLYGON CENTROIDS

To run RAW POLYGON CENTROIDS: From the WinGMM main window menu, select "View/Raw polygon Centroids"
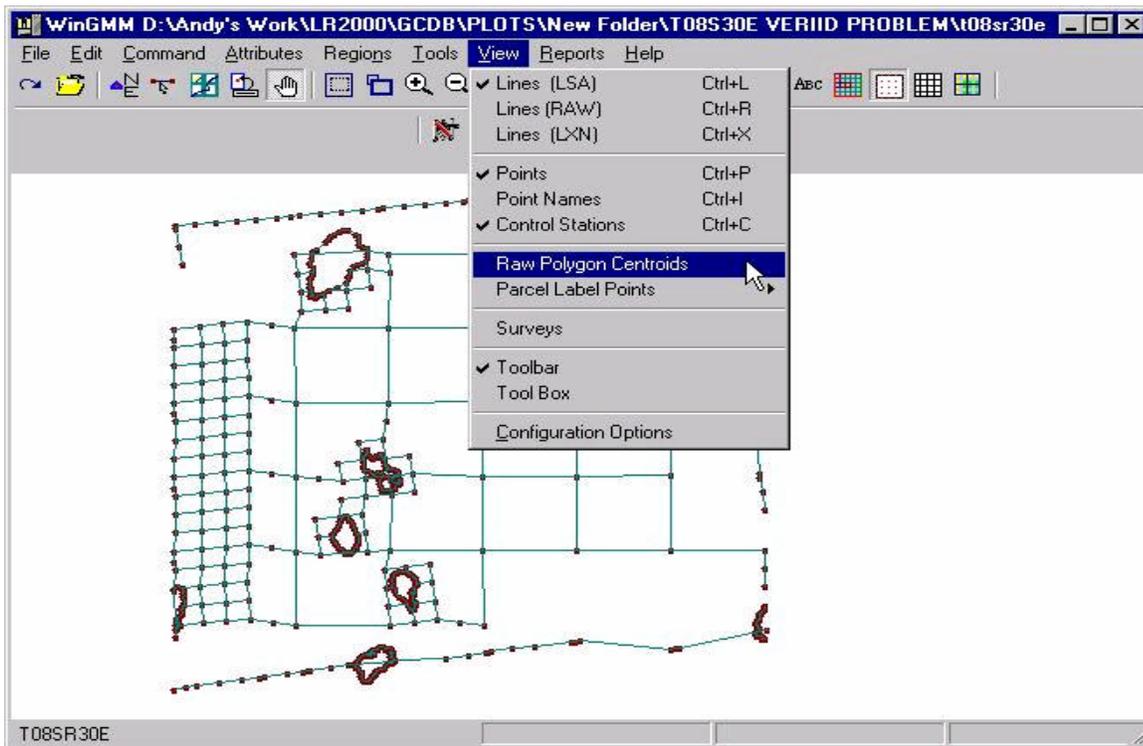
Purpose of Raw Polygon Centroids: The raw polygon (polygons created by the raw file only) edit feature Allows the user to correctly tag raw polygons as one of the following; **S** - for standard aliquot raw polygon, **I** - for inside a special survey raw polygon, **O** - for outside but adjacent to a special survey raw polygon. Correct tagging of raw polygons allows the LLDW.exe program to create the attribute labels with greater efficacy.

Next enable the "Select Raw Polygons" from the toolbar.
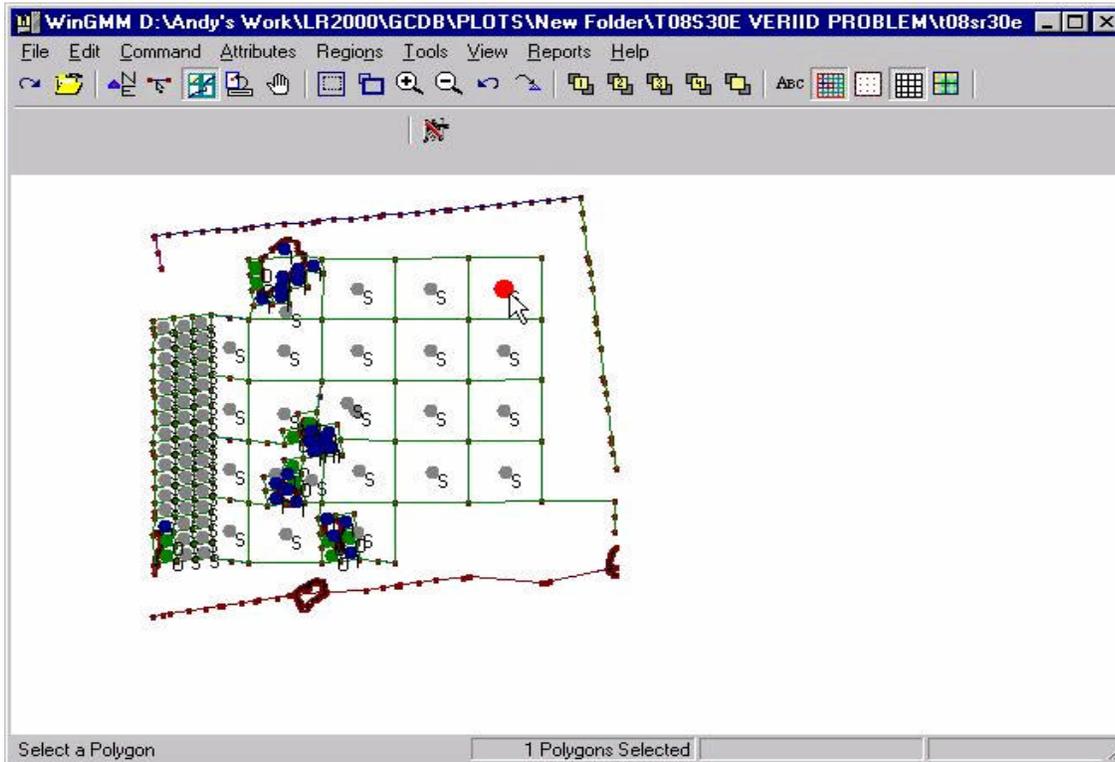
Choose a raw polygon by left clicking the mouse on the centroid. The centroid highlightes.
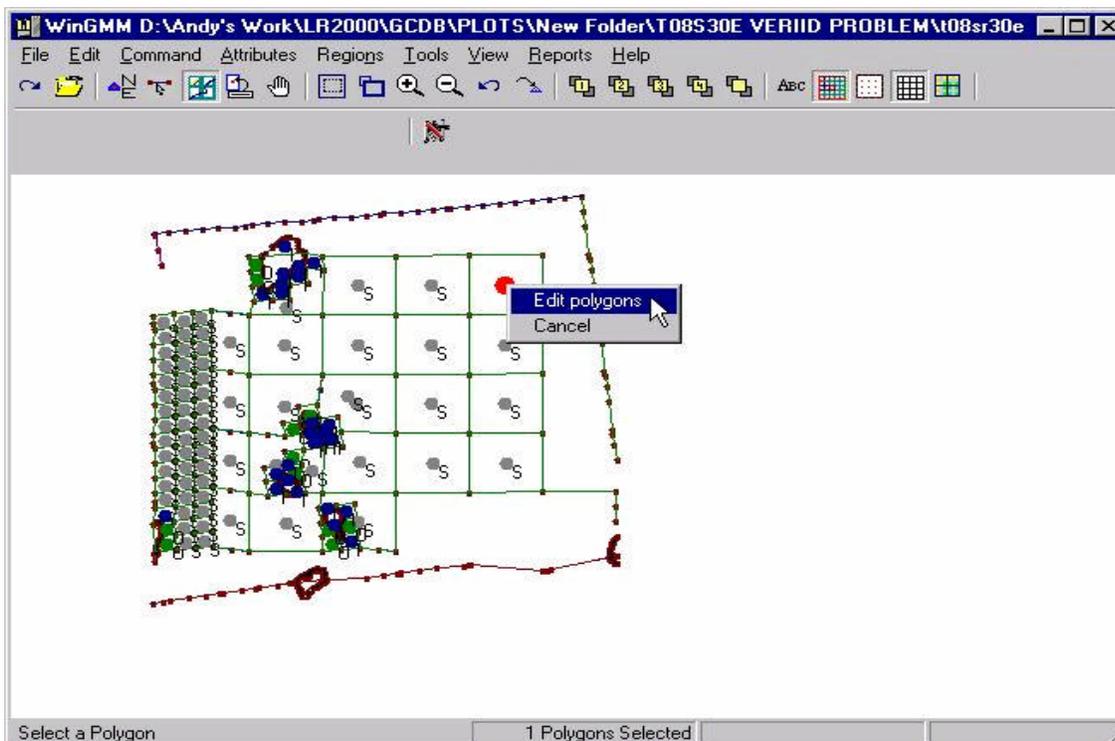
Right click mouse and a small window pops up with an Edit or Cancel choice.
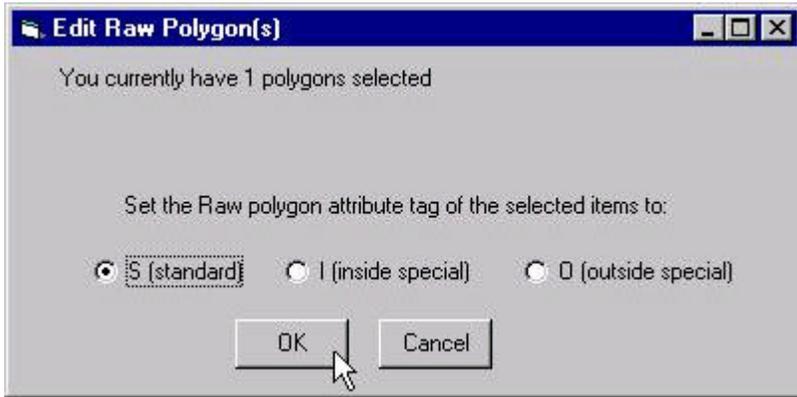
Choosing Edit pops up the Edit Raw Polygon(s) window and the user selects the desired S, I, or O attribute and selects "OK" to complete the edit process.

The user may edit single selections or multiple selections of raw polygons.

LLD

To run LLD: From the WinGMM main window menu, select "Attributes/Link Parcels with Descriptions (LLD)"

Purpose of LLD:	To create the .IID file containing data concerning each polygon in a township and annotate this polygon data with a combination of data found in the files LLD reads. LLD also creates an .AN file to support LR2000.
Required files:	.LXN, .COR, .RAW, .SID, .INT, .LOT, .LLD, and .RPO
Optional files:	none
Output files:	.IID and .AN The .IID file is a combination of the data in all the files LLD.EXE read to develop a 'parcel description' for each polygon in a township. The parcel description is the information necessary to develop the .AN file. The .AN file contains a centroid, or area point, for GCDB generated polygons and part of the data in LLD.
What happens: files.	When LLD is executed, it reads the files outlined above and creates the .IID and .AN files.
User response:	LLD has no prompting.

VERIID

To run VERIID: From the WinGMM main window menu, select "Attributes/Check Polygons (VERIID)"
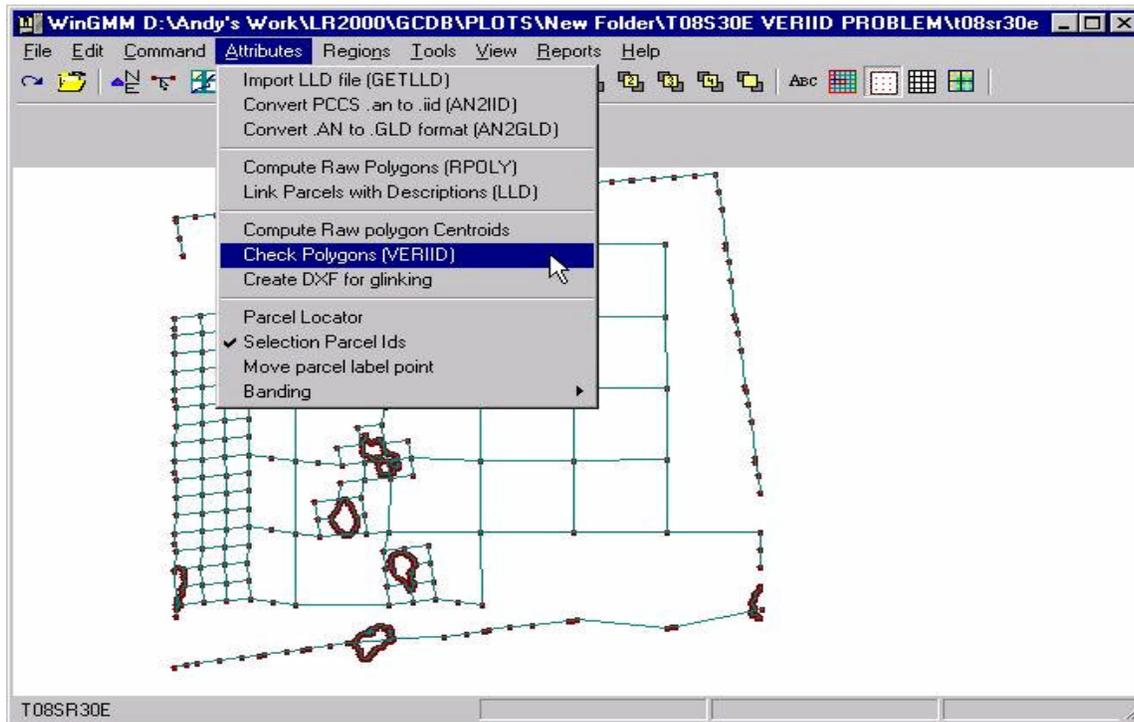
Purpose of VERIID:	To determine if a township needs to be linked after it has been readjusted, and to compute new centroids for polygon's if possible. VERIID can also be used to create an .AN file from the .IID file.
Required files:	.INT, .IID, .COR
Optional files:	none
Output files:	Updates the .AN and .IID files.

Outputs the .VER   The .VER file is a report of the differences in polygon's and
                                                        centroids between an old township adjustment and a new
                                                        township adjustment.

What happens: When VERIID is executed, it reads the files outlined above and updates the centroids in the .IID and .AN files if possible. VERIID uses the .VER file to reports differences in polygon PID's, centroids that fall outside of its associated polygon, and centroids that exceed the users defined distance tolerance.

In old polygons for which there have been topology changes, VERIID labels them as OBSOLETE in the .IID file. New polygon ID strings created by the newer data are appended to the .IID file and VERIID attempts to link them as LLD.EXE would have done.

User response: VERIID prompts for a centroid distance tolerance.

VERIID SCREEN
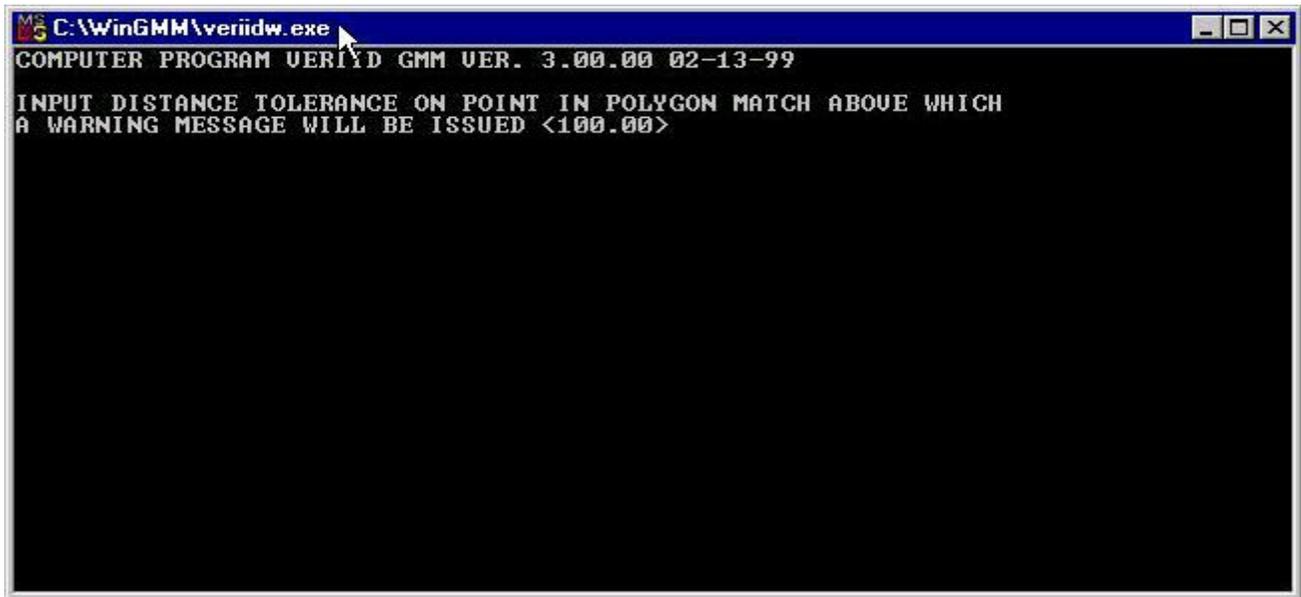
After the desired distance tolerance is entered the program terminate

AN2IID

To run AN2IID: From the WinGMM main window menu, select "Attributes/Convert PCCS .an to .iid (AN2IID)"
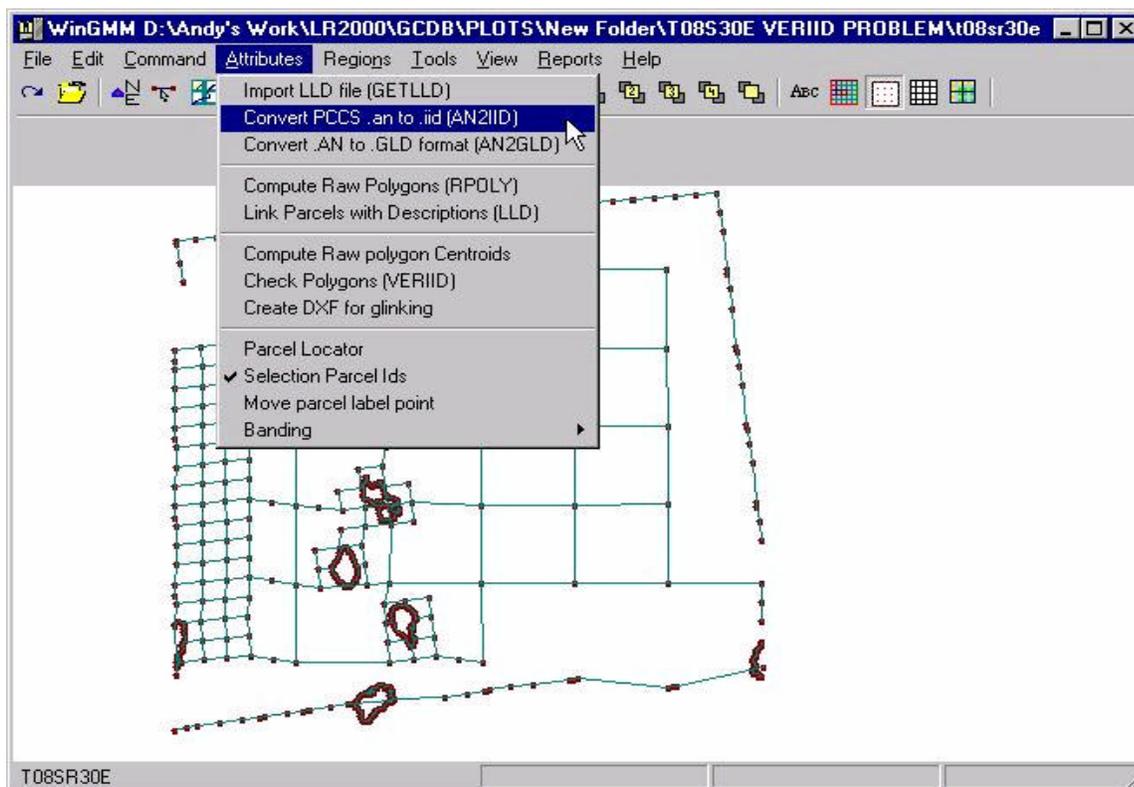
Purpose of AN2IID: AN2IID is used to recreate the .iid file in order to utilize the parcel id edit interface for attribute edits. There are basically two scenarios which fall under the need to run this program: 1) the .iid file was lost or 2) converting PCCS datasets to GMM datasets.

Required files:	.DEF, .COR, .INT, .AN, or LQT township which has been stripped of header, the SEC is replaced by Sec, and renamed to township .an using a text editor.
Optional files:	none
Output files:	Updates the .AN and .IID files.
What happens:	AN2IID reads the centroid coordinate for each attribute and searches for the .int pt id string (polygon) which surrounds the centroid and reports any encounters other than 1:1 match between a centroid and a polygon.
	AN2IID warns you if an error is found by stopping the program and forces you to press enter to continue. If AN2IID does not make you press enter no errors were found.
User response:	AN2IID has no user prompting other than if there is an error and the program stops and warns you and makes you press enter to continue.

AN2IID SCREENS

```
MS  C:\WinGMM\an2iid.exe                                              _ □ X
DOS
COMPUTER PROGRAM AN2IID GMM VER. 3.00.00 08-17-00
                 PROJECT IS T08SR30E
 332 PARCELS READ FROM .AN
READING .INT TO FIND REST OF WORLD PARCEL BY ACREAGE
READING .INT FILE - BE PATIENT !!!
ERROR !!!!!!!!!!!!!!!!!!!!!
 332 POLYGONS IN .AN HAD NO MATCH IN .IID
SEARCH FOR ERROR IN .IID

PRESS ENTER TO CONTINUE


ERROR !!!!!!!!!!!!!!!!!!!!!
 108 POLYGONS IN .INT HAD NO MATCH IN .AN
SEARCH FOR ERROR IN .IID

PRESS ENTER TO CONTINUE


_
```

AN2 IID has detected errors and requires you to press Enter to continue.

```
📄 T08sr30e.iid - Notepad                                          _ □ X
File  Edit  Search  Help
 ERROR - FOLLOWING .INT POLYGON HAD NO MATCH IN .AN
 340220 340240 807630 807640 807650 807660 807670 807680 807690 807700 807710 807720 807730
807740 807750 807760 807770 807780 807790 807800 807810 807820 807830 807840 807850 807860
807870 807880 807890 807900 807910 807920 807930 807940 807950 807960 807970 807980 807990
808000 808010 808020 808030 340220
 ERROR - FOLLOWING .INT POLYGON HAD NO MATCH IN .AN
 805010 805030 805040 805050 805060 805070 805080 805090 805100 805110 805120 805130 805140
805150 805160 805170 805180 805190 805200 805210 805220 805230 805240 805250 805260 805270
805280 805290 805300 805310 805320 805330 805340 805350 805360 805370 805380 805390 805400
805410 805420 805430 805440 805450 805460 805470 805480 805490 805500 805510 805520 805530
805540 805550 805560 805570 805580 805590 805600 805610 805620 805630 805640 805650 805660
805670 805680 805690 805700 805710 805720 805730 805740 805750 805760 805770 805780 805790
805800 805810 805820 805830 805840 805850 805860 805870 805880 805890 805900 805910 805920
805930 805940 805950 805960 805970 805980 805990 806000 806010 806020 806030 806040 806050
806060 806070 806080 806090 806100 806110 806120 806130 806140 806150 806160 806170 806180
806190 806200 950101 950100 806470 806480 805020 805010

 ERROR !!!!!!!!!!!!!!!!!!!!
 FOLLOWING POLYGONS IN .AN HAD NO MATCH IN .INT

Sec_030 F T_A              40.000; M21T0080SR0300E
 PARCEL N,E     708924.134     2023584.334


Sec_030 G T_U     02        396.000; M21T0080SR0300E
 PARCEL N,E     708491.113     2023585.672
```
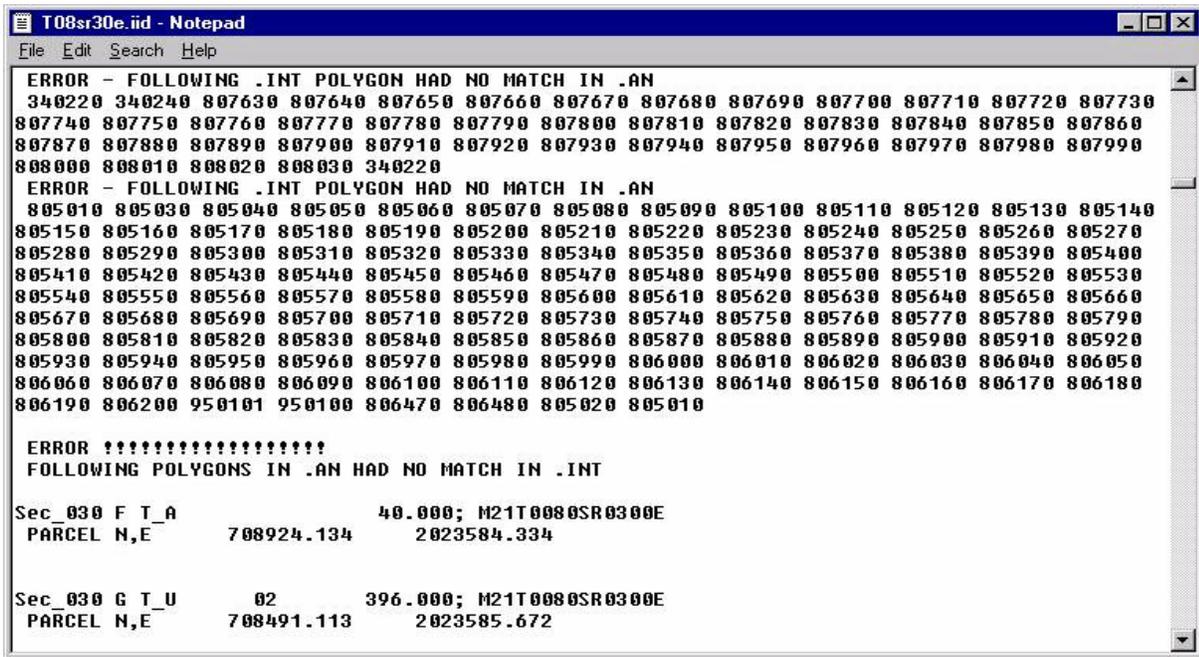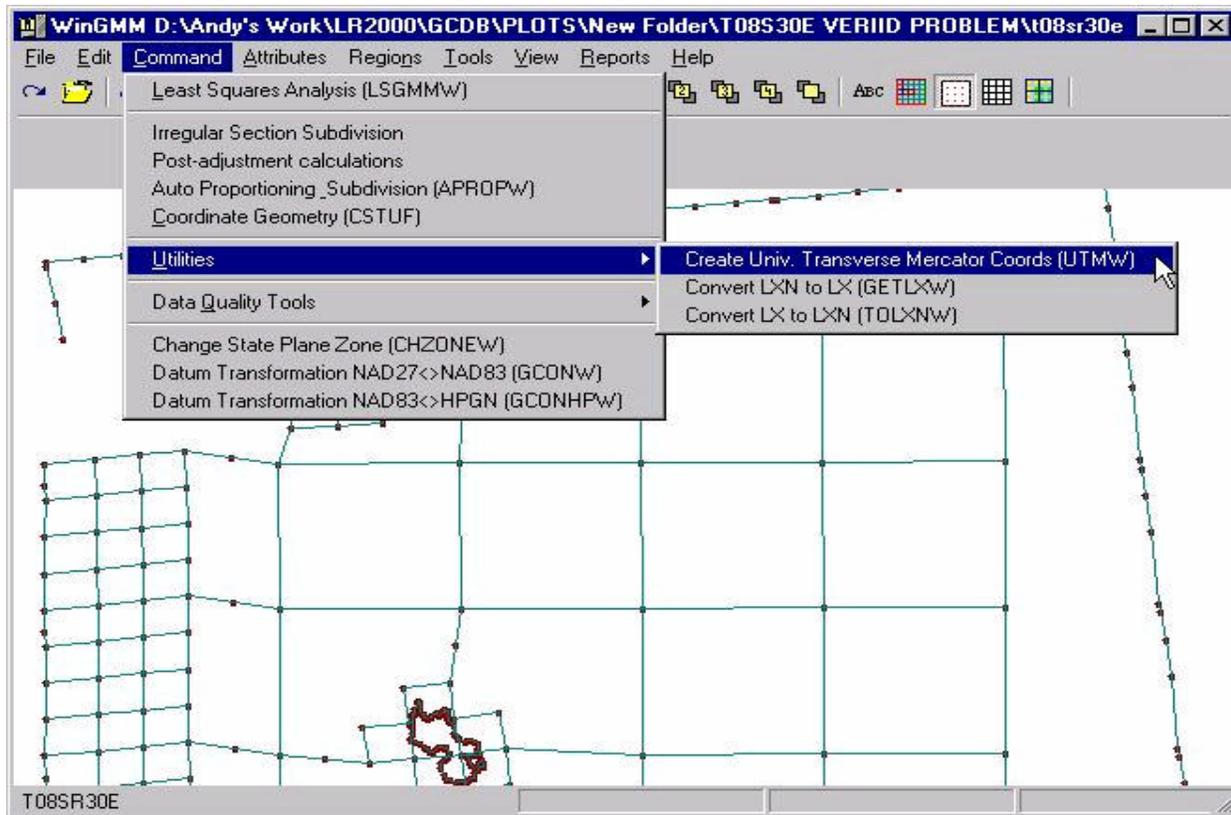
This is the updated .iid file after AN2IID has run and found errors. View the report from the main menu "Reports/Project Reports" and select the .iid file.

UTMW

To run **UTMW**:   From the WinGMM main window menu, select "Command/Utilities/Create Univ.
Transverse Mercator Coords (UTMW)"

Purpose of **UTMW**:	**UTMW** is used to calculate **UTM** coordinates of those points in the .PGC file based on the zone specified in the .DEF file by PROJECW.
Required files:	.PGC Latitude and Longitude coordinates of job
Optional files:	none
Output files:	.UTM (x,y) coordinates of job
What happens:	When **UTMW** is invoked, it transforms coordinates found in the .PGC file and writes them into the .UTM file.
User response:	**UTMW** has no prompting. The user may use the .UTM file for special purposes.

CHGIDS

To run CHGIDS: From the WinGMM main window menu, select "Edit/Change Point Identifier (CHGIDS)"
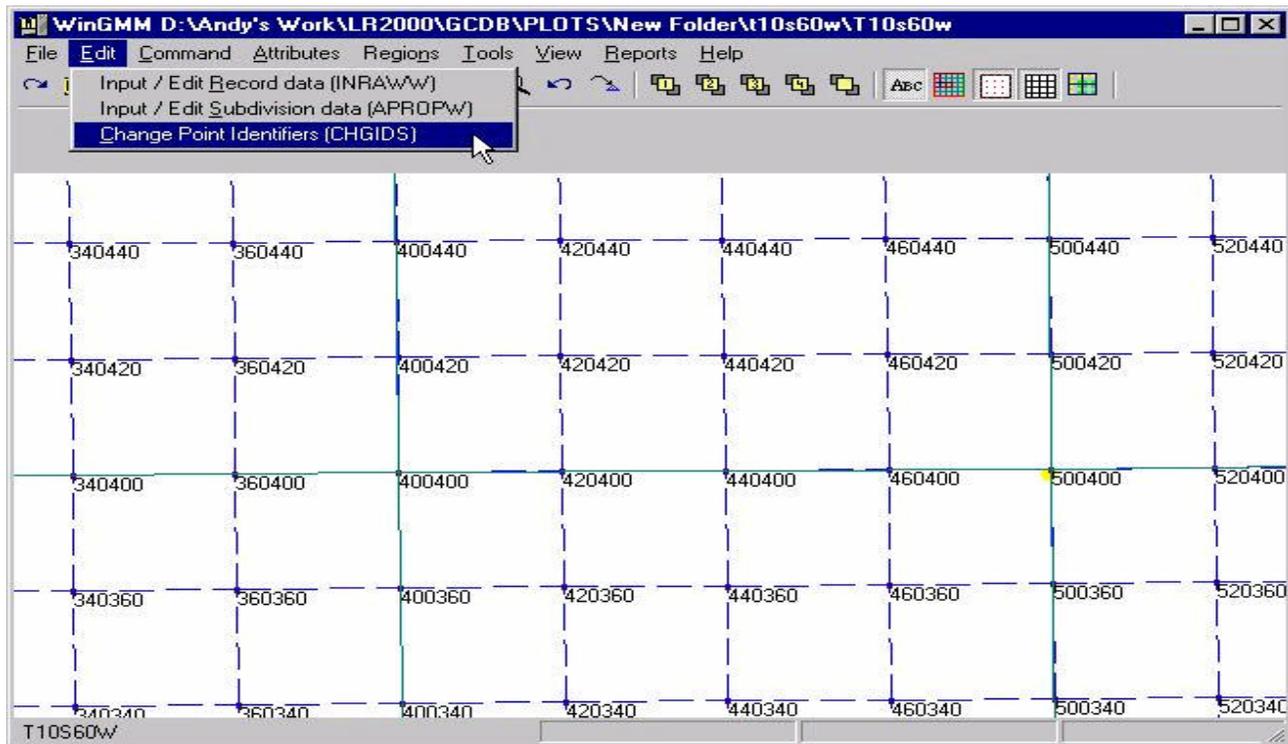
Purpose of CHGIDS: CHGIDS is used to change one PID to another PID based on the extensions listed in the CHGIDS.CFG file.

Required files: Any *WinGMM* files that are defined in the CHGIDS.CFG file. IF CHGIDS.CFG does not exist the error message; "No CFG file. Creating Default File. Error: 53" is displayed. Select OK and CHGIDS.CFG will be created automatically.

Output files: Any *WinGMM* files that are defined in the CHGIDS.CFG file.

What happens: Based on user input, one PID is changed to another. The files to be changed are defined in the CHGIDS.CFG file.

CAUTIONS: It is important to change PIDs in the proper order. For instance, if you are going to change a point's PID to one that already exists on another point, be sure to change the pre-existing one to a different PID first. Failing to do so will cause serious problems. BACKUP of files prior to using CHGIDS.EXE is highly recommended.

NEVER use CHGIDS on regional files. Change them at the single township level, the next time that township is included in a regional adjustment it will use the new PID. The single township will also now use the new PID.

User response: GRAPHICS of CHGIDS SCREEN
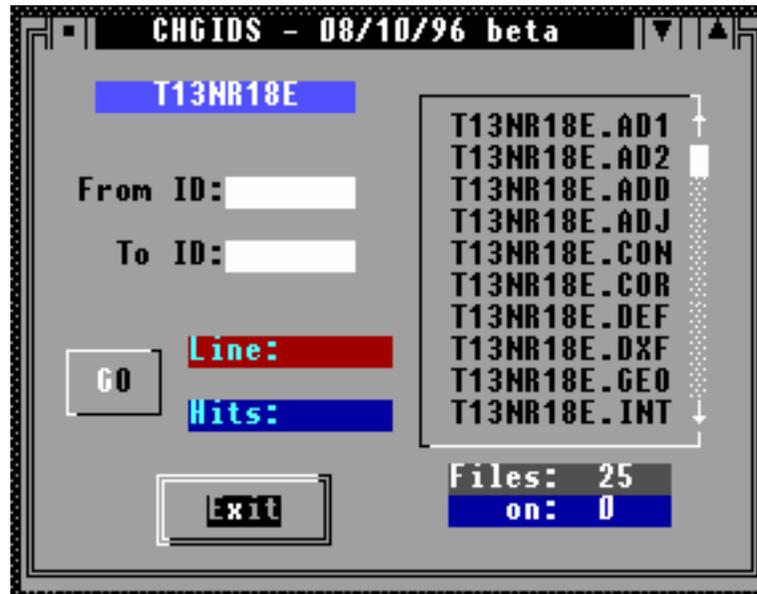
Always input the "**To ID**:" first and the "**From ID**:" second. This will prevent accidentally changing two points to the same PID. After selecting "**GO**", the line number and number of hits for each file is displayed. Select Exit when done changing PIDs.

1) Start the program: The default project and all it's existent files are displayed:

2) Pick or tab to the "To ID:" Window and enter the 6 character PID you wish to change, then

3) Pick or tab to the "From ID:" window and enter the replacement PID.

    If either is not 6 characters, the program will not execute step 3 and you will have to correct the entry. There is no checking for valid PIDs, only that they are 6 characters in length.

4) Pick the GO button or alt-G or tab-enter to it to start the process.

        Notes: The program will skip files whose extensions are not in the CHGIDS.CFG file.

        The program will only change id's that are:
                * at the beginning of a line, or
                * at the end of a line, or
                * have a leading or trailing space, or
                * in an LXN file are located at proper multiples of 6 characters along the line of id's.

5) When done, you can recycle to change another ID, or hit the Exit button, tab-enter to it, or use alt-X to select exit.

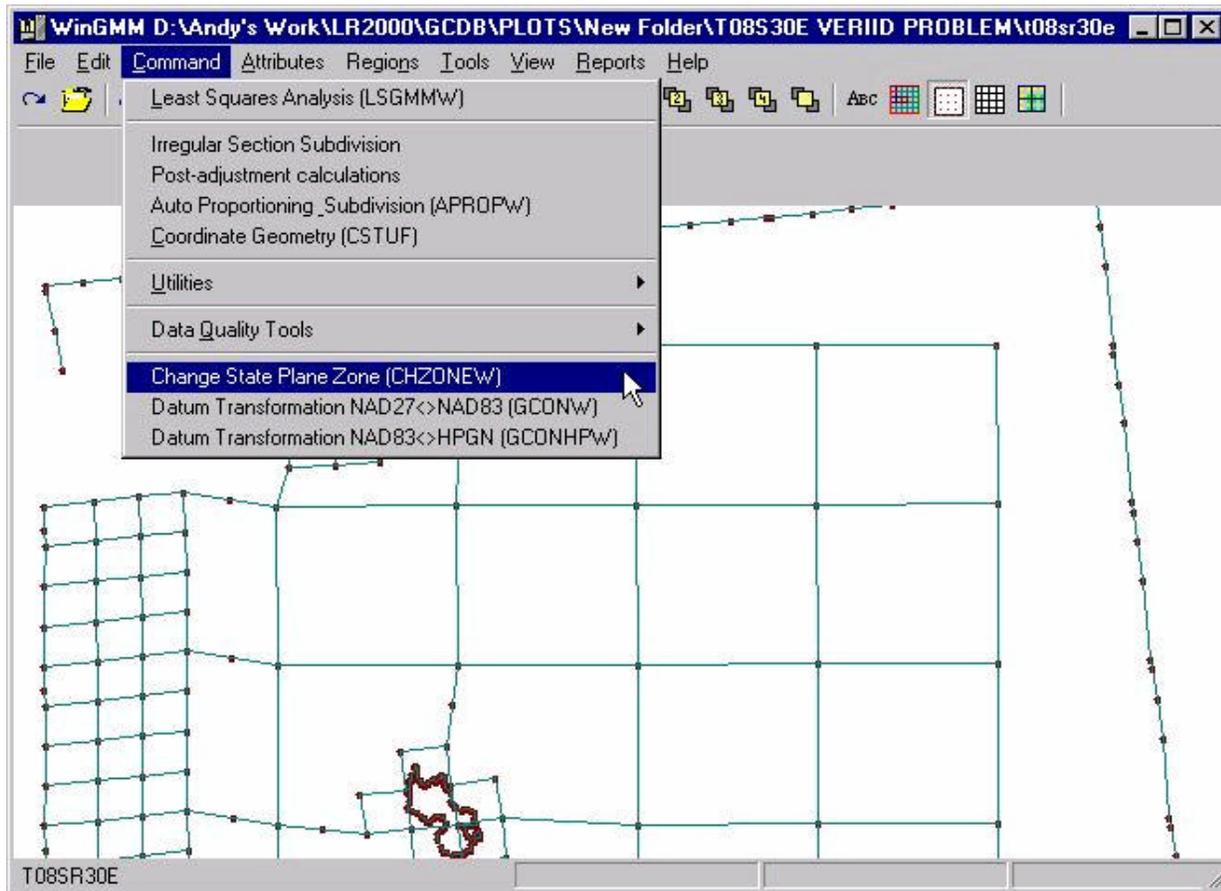
    Example of the default CHGIDS.CFG file:

                ADD
                ADJ
                CHK
                CON
                COR
                DXF

                                                                        CHGIDS

GEN
GEO
II2
IID
INT
IRR
LEV
LSA
LX
LXN
MAT
MIN
NOT
PGC
RAW
RCL
RPO
SD
SUB
UTM

By adding or deleting file extensions to this list, the user can control which files will have PIDs changed in them.

CHZONEW

To run **CHZONEW**: From the WinGMM main window menu, select "Command/Change State Plane Zone (CHZONEW)"

Purpose of **CHZONEW**: To change the state plane zone of a project by selecting Item 4. The .COR and .LSA coordinates are changed to the zone the user selects. This is useful for townships that border a zone boundary. It allows edge match of townships crossing the boundary.

Input files: TEMP.JOB Name of the existing project - Item 1

Optional files: .DEF Default values (old) - Items1-15

Output files: TEMP.JOB Name of the current project - Item 1
  .DEF Default values (new) - Items1-15
  .COR New zone coordinates - Item 4
  .LSA Coordinates. changed to zone - Item 4

CHZONEW SCREEN

NOTE: **CHZONEW** also operates similar to PROJECW. The other menu selections are fully operational and will make changes to the .DEF file. See PROJECW for a complete description of the operation of Items 1 thru 3 and 5 thru 15. **WARNING:** It is not recommended to use this feature while changing zones.

ONLY Item 4 is discussed here. Choose (4) to respecify the State Plane Zone wanted.

(4)   **STATE PLANE ZONE**
4
CR

A chart of zone numbers will appear for user to select from.

Excerpt: 3 ARIZONA EAST

4 ARIZONA CENTRAL
5 ARIZONA WEST

User would key in [4] for the Arizona central zone.

CR

CHZONEW

SNOOPER and REGSNOOP

SNOOPER

To run SNOOPER: Program a Toolbox button of your choice to activate this function. (see section 2, configuration options)

Purpose of SNOOPER:

The most important concepts in deriving a legitimate adjustment are elimination of blunders and assigning error estimates reflective of the true quality of the data. SNOOPER was developed to evaluate error estimates of individual source data (SIDs) by determining the RMS value of all bearings and distances associated with a SID. It also identifies individual measurements that vary more than twice the average adjustment of the overall SID as potential blunders.

Required files:

township.RAW	From, To, and SID's are gathered, 1/4 *corners*. are thrown away to match *township*.ADJ file.
TEMP.JOB	Gets township for naming files
township.SID	Gets SID name, and error estimates.
township.ADJ	Used for analysis. When stars occur in the snoop field, SNOOPER continues assuming the snoop to be 9.99. Corrupt maybe, but better than leaving those values out of the SNOOPER calculations.

Output files:

township.EST	Basically, a reformatting of the .ADJ file. Bearing and distance are grouped together and the SID name is placed after the TO Point ID. It was originally a throwaway file, however, production people like the looks of this file.
township.SNO	A SID file with SNOOPER calculated error estimates.
township.REP	This is the report file that tracks the evaluations done. The SNOOPER always appends to this file. It is very useful in documenting efforts to arrive at the best solution. The file consists of three things. First part is the SID file used in the evaluation. The second part is the resulting RMS and SEUW values gleaned from the .ADJ file, the final part is SNOOPER evaluations of the adjustment by SID.
township.JNK	Extracted observations, from the *township*.ADJ file, that deviate from the mean.
DOIT.BAT	Written to ease the gyrations, forcing *WinGMM* to use the SNOOPER's *township*.SNO file.

What happens:

SNOOPER calculates error estimates necessary to derive a desired snoop RMS value of 1.0 on bearings and distances for every SID in the data set. SNOOPER is also capable of reading a one character field beyond the last 40.00 in the SID file. If you put an "H" at that location, SNOOPER will not calculate evaluate new error estimates for that SID. If a "B" occurs, it maintains the existing bearing estimate but writes its calculated distance error estimate to the new .SNO file. If a "D" occurs, it maintains existing distance estimate but writes calculated bearing

SNOOPER and REGSNOOP

error estimate to the new .SNO file. This allows SNOOPER to perform error estimate analysis similar to robusting on individual measurement types in LSGMMW. As elimination of blunders is a critical concern, any individual measurement that is adjusted more than twice the calculated mean adjustment of a source is considered to be a potential blunder and gets written to a file.

SNOOPER ERROR MESSAGES

1) *SCREWY ADJ file* - self-explanatory.

2) *SCREWY TEMP.JOB* - self-explanatory.

3) *RESULTS ARE QUESTIONABLE--ERROR IN READING SNOOP* - Usually caused by stars in the snoop field. Results are suspect because SNOOPER had to make assumptions to continue. Can also be caused by duplicate rows of data in the RAW file.

4) *ERROR IN CONSTRUCTION OF township.EST* - In rare occasions the reading of the .RAW file may screw up causing that line to be ignored in SNOOPER's estimates. The results may or may not be significantly compromised.

5) Each SID in the .SID file must have at least one comment line or SNOOPER will terminate with a run-time error.

Evaluation of the junk (.JNK) file.

This file lists all individual measurements that were adjusted more than twice the mean adjustment of its overall SID adjustment. This is a rigid test of consistency that identifies potential blunders. Remember, blunders are not only data entry errors but can also be measurement errors (see the WinGMM Technical Reference Manual-BLUNDER DETECTION TOOLS AND STRATEGY). Here is a portion of a typical .JNK file:

```
B100300        100340 R03120363 N  5- 3- 0W     3-12-13 (1.6
B236400        220400 R03120363 N 83-18- 0W     3-47-41 (1.9
B220400        200400 R03120363 N 83-18- 0W **   6- 6- 1 (3.1
D200300        200400 R03120363  5280.000 *** -33.122 (3.1
```

Each measurement listed in the .JNK file should be checked against the original source document for accuracy. Only when all correctable blunders have been eliminated can SNOOPER provide a valid analysis of error estimates. Finally, on multiple runs of SNOOPER, the .JNK file is overwritten. When no deviations from the mean exist, any previous copy of the .JNK file will not be deleted.

Evaluation of the report (.REP) file.

Despite our best efforts, many times our initial error estimates are merely an educated guess and may need to be refined. In a least squares adjustment, the adjustment applied to a measurement is not dependent only on it's own error estimate, but also error estimates for all other measurements in that data set. Because of this, it is necessary to carefully plan which error estimates should be changed and which should not and it is recommended changes to error estimates be made via *INRAWW* and not through automated capabilities discussed below. In a situation where one source of data is much worse than estimated, it is not uncommon for SNOOPER to suggest unreasonable error estimates for relatively good data such as the suggested 1.5 seconds of bearing for SID 1922NB on the example shown below. SNOOPER is an evaluation tool and cannot replace good judgment.

SNOOPER and REGSNOOP

The top part of the .REP file contains the most important information from the .SID and .ADJ files used to analyze error estimates with statistics regarding its analysis of the township adjustment at the bottom. Below is an example of SNOOPER analysis of a township consisting of data from 6 sources with an explanation of the fields:

```
-------------------------------------------------------
/////////////////////////////////////////////////
1922NB    DISTANCE SNOOP RMS FOR   5 =  .44  2  653.0  1500.0  .3
1922NB     BEARING SNOOP  RMS FOR   5 =  .05 20    1.5    30.0  .0
1880EB    DISTANCE SNOOP RMS FOR  10 =  .03 30   66.6  2000.0  .0
1880EB     BEARING SNOOP  RMS FOR  10 =  .03 30   10.0   300.0  .0
1872NB    DISTANCE SNOOP RMS FOR  28 =  .28  3  852.3  3000.0  .2
1872NB     BEARING SNOOP  RMS FOR  28 =  .34  2  411.7  1200.0  .1
1879         DISTANCE SNOOP RMS FOR  14 =   .98  1 3048.4  3125.0  .7
1879         BEARING SNOOP  RMS FOR  14 =  .49  2  878.6  1800.0  .2
1879WB    DISTANCE SNOOP RMS FOR   2 =  .10 10  149.3  1500.0  .1
1879WB     BEARING SNOOP  RMS FOR   2 = 1.29  0 2328.4  1800.0  .5
1879SB    DISTANCE SNOOP RMS FOR   8 =  .48  2 1506.9  3125.0  .3
1879SB     BEARING SNOOP  RMS FOR   8 =  .50  1  907.0  1800.0  .2


|---1-----|  |-----------2 (text)---|  |----3------------|   |--4--|  |---5--|  |--6----|  |-7--|
```

1. SID
2. # of Observations (text)
3. RMS calculated by SNOOPER
4. 1/RMS
5. Suggested error estimate
6. Original error estimate
7. Standard deviation

While most of the fields above are self-explanatory, additional discussion of two of them is warranted.

Field 5 shows suggested error estimates. As discussed previously, changing error estimates of a single SID will have a somewhat unpredictable effect on the remaining data. Also remember the more observations involved, the greater the impact an error estimate change will make. Only experience can teach a user the effects this can have but when there are a large number of observations for a SID, you may find it necessary to refine error estimates somewhere between the original and suggested values.

Field 7 shows the standard deviation that tells you something about consistency of the data set. Error estimates based on inconsistent data are not statistically valid. A high standard deviation is an indication of a possible blunder. The standard deviation should be interpreted as follows:

- From 0 to .5 means the data is consistent and there are probably no blunders.

- From .5 to .9 is cause for concern. This data source should be checked for blunders. However:

    1) If error estimates are extremely tight, then values of .5 to .9 may not be a concern.

    2) If only a few observations are involved, the standard deviation may be statistically insignificant.

    3) If error estimates are extremely loose, values of .5 to .9 may be indicative of blunders or control problems.

- From 1.0 to infinity indicates near certainty of a blunder but can also be caused by bad control data.

The .SNO File

SNOOPER and REGSNOOP

SNOOPER writes it's calculated optimal error estimates (field #5 in the .REP file) to a .SNO file. This file is really a .SID file. While you can overwrite your existing .SID file with the .SNO file, as recommended in one of the blunder detection processes in the <u>WinGMM Technical Reference Manual- Blunder Detection Tools and Strategies</u>, it is important to keep a record of the original .SID file. Almost all experienced <u>WinGMM</u> users choose *INRAWW* to make changes via the SID MAINTENANCE option.

The DOIT.BAT file

SNOOPER was first developed in January 1994. As part of the initial development a DOIT.BAT file was created to facilitate automated error estimate edits. While the creation of this file was never eliminated in subsequent development of SNOOPER, <u>WinGMM</u> program enhancements have made DOIT.BAT nearly useless and it's use is not recommended for reasons discussed previously.

The blunder detection and error estimate refinement capabilities of SNOOPER, like any other <u>WinGMM</u> process, becomes easier with experience. Many times, SNOOPER will point your problems out to you and allow final solution to be made on a single run. Sometimes, especially in data sets that have numerous or bad source data, it will require a repetitive cycle to arrive at an acceptable solution

REGSNOOP

To run REGSNOOP: Program a Toolbox button of your choice to activate this function. (see section 2, configuration options)

This program evaluates the statistics of each type of observation for each township in a region. Because there is no .RAW or .SID files for a region, REGSNOOP's evaluation is not based on SID

INPUT FILE:

region.ADJ   Gets snoops, when stars occur in the snoop field, a notice is printed to the screen, then the REGSNOOP continues assuming the snoop to be 9.99. Corrupt, maybe, however, this is better than leaving the occurrence completely out of the REGSNOOP estimates.

OUTPUT FILES:

region.REP   This is the report file that tracks the evaluations done. Unlike SNOOPER, it never appends to this file. It is very useful in documenting efforts to arrive at the best solution. The file consists of two parts. The first part is the resulting RMS and SEUW values gleaned from the ADJ file, the final part is the REGSNOOP's evaluations of each townships observations.

region.JNK   Extracted observations, from the *region*.ADJ file, that deviate from the mean.

As we have seen, many times we must make choices between conflicting data while processing individual townships. While not common, sometimes this conflicting data is very complex and even the most competent user will occasionally come to invalid conclusions based on data analysis. Consider a situation where 4 adjoining townships of equal (good) survey quality are processed alone. In one of these townships, you find a conflict where most the control fits but all control points in the eastern 1/3 are shifted around 100 ft. to the northeast. You make your choice based on a preponderance of evidence and eliminate the control that is shifting. Unknown to you an error, similar to invalid basis of bearing on a survey, was made in the creation or digitizing of a single quad which caused all those points you kept to be skewed. In a rigid boundary transfer regime, the boundaries are transferred as control, with no error, to adjoiners. The error introduced is distributed throughout the survey and control on the adjoiners and error analysis indicates that, while not as good as you thought, these townships are acceptable. If the

SNOOPER and REGSNOOP

27- 4

4 townships are run through a regional adjustment, it is nearly certain the bad control you erroneously used would be moved excessively and your erroneous choice would be identified. While searching these problems out in a 4 township .ADJ file is laborious, most regional adjustments are much larger than 4 townships. REGSNOOP does this for you.

The most important file for evaluation of REGSNOOP is the .JNK file. To evaluate the .JNK file, look for any township(s) that have an abundance of high SNOOP values. They point to an area where the error estimates in a single township adjustment may need to be re-evaluated. The most common cause of high SNOOP values is error estimates on common township boundaries that are not similar. While error estimates on common data in two adjoining townships do not have to be exactly the same, they should be close. If data was given much better error estimates in one township than in the adjoiner, you have caused error be taken into another survey in one of those townships. When common data error estimates vary widely, one township must try to meet the error estimates in another that may have more of an influence than it should. If problems in an individual township are identified, you must reprocess that township with adjusted error estimates so it fits into the region better.

As with SNOOPER, REGSNOOP is only a tool for evaluating the data and should not replace good judgment.

CMM2GMM

To run CMM2GMM: From the WinGMM main window menu, select "File/Import/Cadastral Measurement Management (CMM2GMM)"
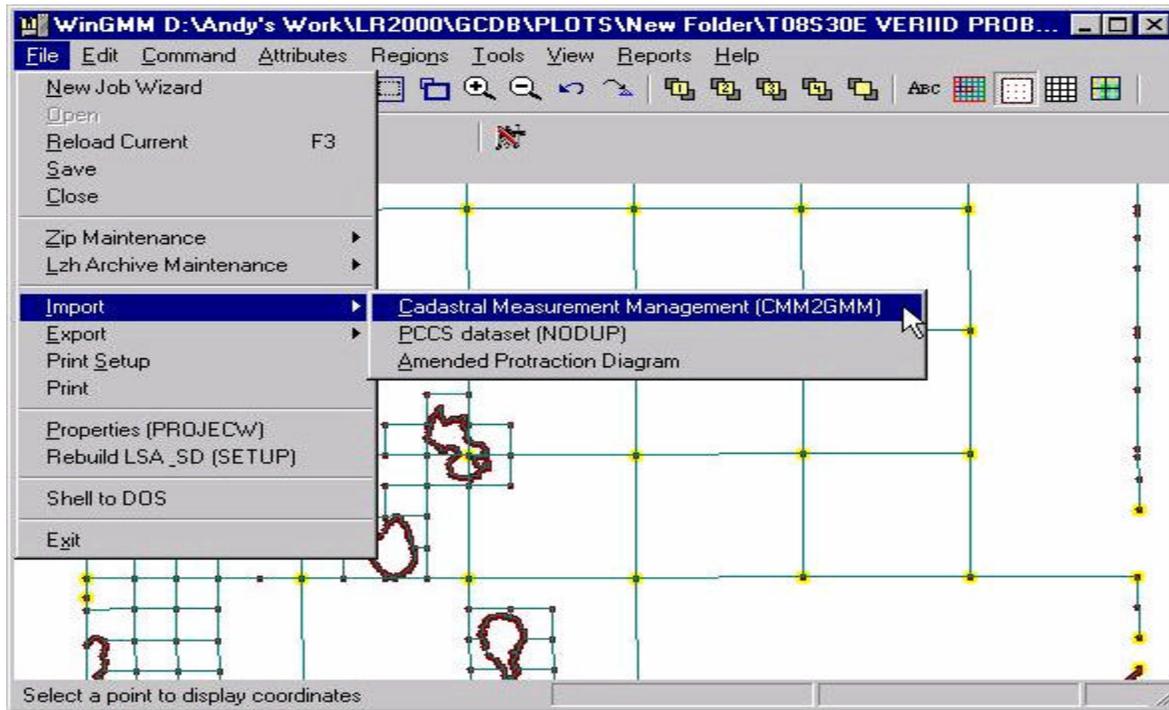
Purpose of CMM2GMM: CMM2GMM is used to create new or make changes to existing, <u>WinGMM</u> files from CMM files.

Required files:	.COR	CMM state plane coordinate file.
	.DEF	CMM project definition file.

Optional files:	.LEV	CMM elevation file.
	.CHN	CMM chain file.

Output files: .RAW   A standard <u>WinGMM</u> *project*.RAW file minus the first two lines (header and 11111 lines).

.CMM   A report file that resembles a standard <u>WinGMM</u> .RAW file. It will also report any changes made to the original <u>WinGMM</u> *project*.RAW and the history information of any previous runs of CMM2GMM.

.LSA   If coordinates are imported as control.

.SD   If coordinates are imported as control.

User created filename   Chain file created, if it did not exist.

What happens: When CMM2GMM is invoked, it uses a chain file or user input to determine which PID's are the end points of each survey line. It then uses the CMM *project*.COR file to inverse between these points, and determine Bearing and Distances to create a *project*.RAW file.

A chain file is an ASCII text file that is a list of PID's to be read from the CMM .COR file for inversing between. The order of the chain file determines the inverse. Each chain must end in a 0 (zero) line.

UNDERSTANDING THE LOGIC OF THE PROMPTING

CMM2GMM provides a number of prompts, whose sequence changes based on the existence or nonexistence of a chain file. The reader will not be served by a verbose listing of every possible interaction that is available. Below is a single reference for the user to access when confronted with prompt messages, rather than repeated explanations of these processes throughout the document.

CMM2GMM USES the currently defined WinGMM project as the default.

SUMMARY OF CMM2GMM PROMPTING

PROMPT	EXPLANATION
ENTER CMM PROJECT NAME (WITH PATH IF DIFFERENT DIRECTORY/DRIVE)	Enter the CMM project (and path if necessary) you want to convert to <u>WinGMM</u>.
INPUT A CHAIN FILE NAME (YOU WILL INPUT STATIONS IF FILE DOES NOT EXIST) OR PRESS ENTER TO QUIT CHAIN FILE ENTRY.	Input file name of an existing chain file, it will read it. Or if you give the name of a new chain file, it will build it.

PROMPT	EXPLANATION
IMPORT COORDINATES AS CONTROL, TOO? (N)	By answering yes to this prompt, an .LSA and .SD file will be created with points entered as control (.001 error estimate). If these files already exist, the new control points will be added to them, but to update the <u>WinGMM</u> *project*.CON run *INRAWW* and select (4) CONTROL STATION MAINTENANCE (6) UPDATE .CON FILE

AUTOMATIC MODE? (Y/N) (N)
 	
    CAUTION:
    Use this option carefully it can wipe out existing .RAW files.
	If yes is selected for this prompt, the program will automatically either create or append to a project.RAW file. It will read every 6-digit numeric PID, from the CMM .COR file, and inverse between them to form survey lines. PID's over 6 digits, or those containing alpha strings will be ignored.

INPUT STATION NAME, 0 FOR END OF CHAIN, OR PRESS ENTER TO QUIT STATION ENTRY.	Build chain file if none existed before. Chains are the beginning and end of survey lines (in rect. surveys, they are sec, 1/4, 1/16, etc *corners*). More than one chain can be entered for any project.
OUTPUT DISTANCES IN CHAINS TO (1) .1 (ONE PAST DECIMAL) (2) .01(TWO PAST DECIMAL) (3) .001 (THREE PAST DECIMAL) PICK A # (3)	Select precision of distances

OUTPUT BEARINGS TO (1) NEAREST MINUTE (2) NEAREST MINUTE (3) NEAREST 30 SECONDS (4) NEAREST 20 SECONDS (5) NEAREST 15 SECONDS (6) NEAREST 10 SECONDS (7) NEAREST 5 SECONDS (8) NEAREST 1 SECOND PICK A # (1)	Select precision of bearings
INPUT SID NAME FOR THIS CHAIN	Input SID put into *project*.RAW
YOU CAN NOW IMPORT STATION COORDINATES AS CONTROL THAT ARE NOT ON CHAINS. INPUT A STATION NAME (ENTER IF FINISHED WITH THIS OPTION)	If you enter station names, an .LSA and .SD file will be created with points entered as control (.001 error estimate). If these files already exist, the new control points will be added to them, but to update the <u>WinGMM</u> *project*.CON run *INRAWW* and select (4) CONTROL STATION MAINTENANCE (6) UPDATE .CON FILE

CMM2GMM SCREEN
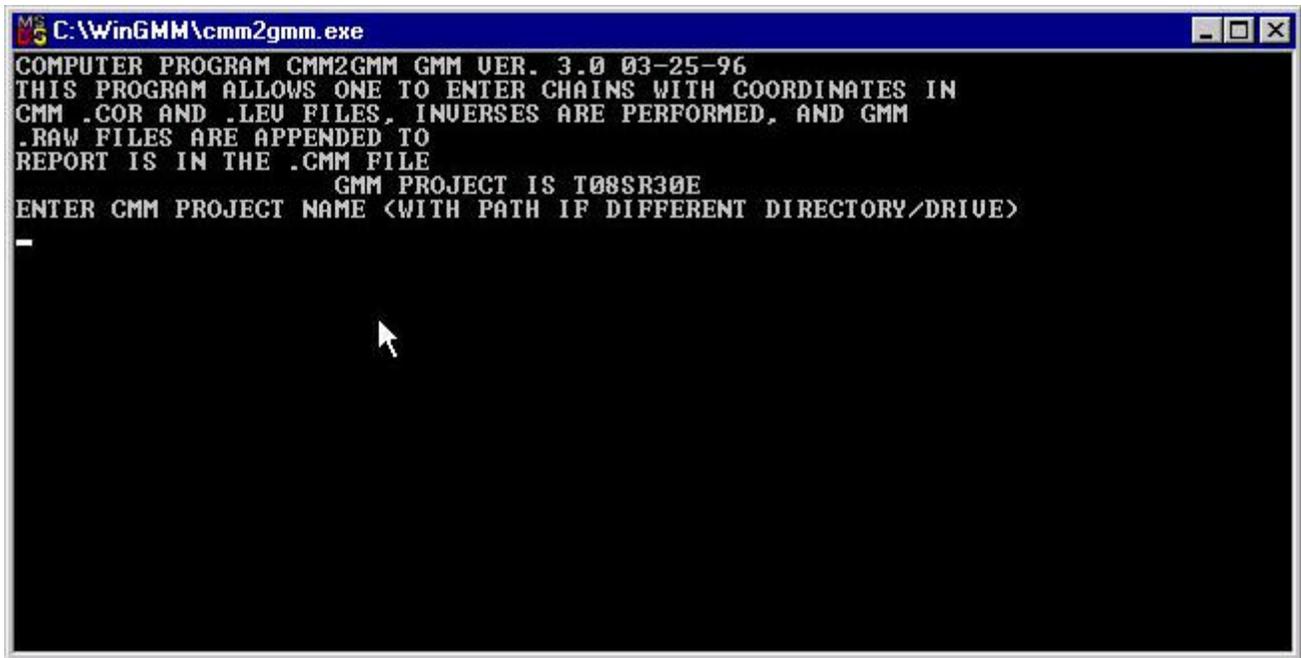
COMPUTER PROGRAM CMM2GMM <u>WinGMM</u> VER. 3.0 03-25-96
THIS PROGRAM ALLOWS ONE TO ENTER CHAINS WITH COORDINATES IN
CMM .COR AND .LEV FILES, INVERSES ARE PERFORMED, AND WinGMM
.RAW FILES ARE APPENDED TO
REPORT IS IN THE .CMM FILE
                                    WinGMM PROJECT IS T03NR17E
ENTER CMM PROJECT NAME (WITH PATH IF DIFFERENT DIRECTORY/DRIVE)
T03NR17E
INPUT A CHAIN FILE NAME (YOU WILL INPUT STATIONS IF FILE DOES NOT EXIST)
OR PRESS ENTER TO QUIT CHAIN FILE NAME ENTRY
SEC31EBDY.CHN
IMPORT COORDINATES AS CONTROL, TOO? <N>

OUTPUT DISTANCES IN CHAINS TO
(1) .1 (ONE PAST DECIMAL)
(2) .01 (TWO PAST DECIMAL)
(3) .001 (THREE PAST DECIMAL)
PICK A # <3>

OUTPUT BEARINGS TO
(1) NEAREST MINUTE
(2) NEAREST .1 MINUTE
(3) NEAREST 30 SECONDS
(4) NEAREST 20 SECONDS
(5) NEAREST 15 SECONDS
(6) NEAREST 10 SECONDS
(7) NEAREST 5 SECONDS
(8) NEAREST 1 SECOND
PICK A # <1>

INPUT SID NAME FOR THIS CHAIN

CMM2GMM

TEST
100100   100200   79.711   4   4000.0 TEST
100200   100300   79.800   4   1700.0 TEST
100300   100400   79.794   4   1700.0 TEST
100400   100500   79.837   4   1000.0 TEST
RECORD 100100 - 100200 IN ORIGINAL DATA IS ELIMINATED
RECORD 100200 - 100300 IN ORIGINAL DATA IS ELIMINATED
RECORD 100300 - 100400 IN ORIGINAL DATA IS ELIMINATED
RECORD 100400 - 100500 IN ORIGINAL DATA IS ELIMINATED
INPUT A CHAIN FILE NAME (YOU WILL INPUT STATIONS IF FILE DOES NOT EXIST)
OR PRESS ENTER TO QUIT CHAIN FILE NAME ENTRY

ORIGINAL NUMBER OF RECORDS ' 163
PRESENT NUMBER OF RECORDS ' 163
NUMBER OF ELIMINATED RECORDS FROM ORIGINAL =   4
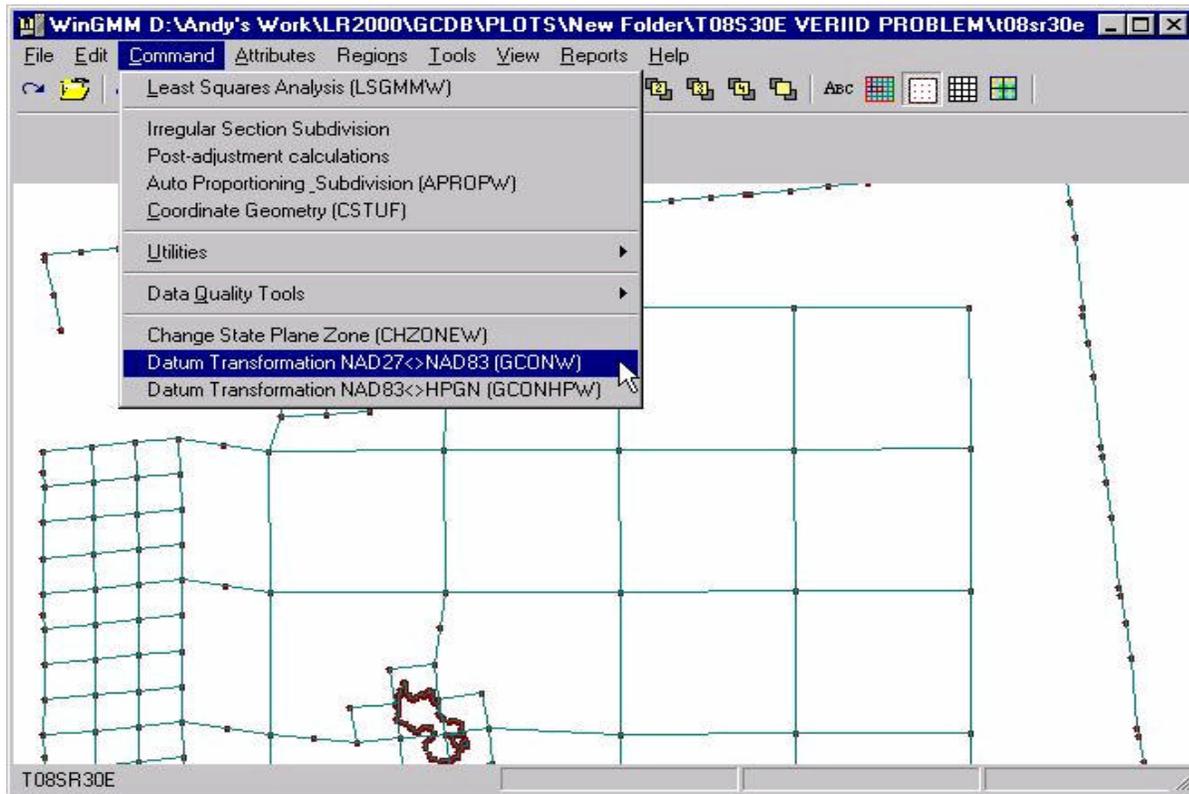YOU NOW CAN IMPORT STATION COORDINATES AS CONTROL WHICH ARE NOT ON CHAINS.
INPUT A STATION NAME (ENTER IF FINISHED WITH THIS OPTION)

NO CONTROL IMPORTED
Stop - Program terminated

GCONW

To run GCONW: From the WinGMM main window menu, select "Command/Datum Transformation NAD27<>NAD 83 (GCONW)"

Purpose of GCONW: GCONW is used to convert WinGMM files from NAD 27 to NAD 83 or NAD 83 to NAD 27.

Required files: .COR
    .DEF
    .CON
    CONUS.LASNGS file
    CONUS.LOSNGS file
    NAD27.CONNGS file
    NAD83.CONNGS file

Optional files: .GEO   If .GEO is missing, it will be built from .CON
    .LSA
    .SD
    .SID
    .PGC
    .AN
    .IID
    .LX
    ASCII list of townships

Output files: The existing WinGMM Required and Optional files are updated based on the new datum.

What happens: When GCONW is invoked, the coordinates in the existing WinGMM Required and Optional files are converted either from NAD 27 to NAD 83, or from NAD 83 to NAD 27. GCONW reads the .DEF file to determine which way to go. The .CON file will get both NAD27 and NAD 83 coordinates, which are labeled as such. Projects can go from NAD 27 to NAD 83, and others can go from NAD 83 to NAD 27 in the same run. In fact, a project can be changed from NAD 27 to NAD 83, and back again in the same run.

Note: The existing project is wiped out as the transferred data replaces it.

GCONW PROMPTS

PROMPT	EXPLANATION
ARE PROJECTS READ FROM (1) KEYBOARD OR (2) FILE	The user must choose between keyboard input or input from an ASCII list of townships. Both types of input allow use of a path for each project, i.e. C:\GMMDATA\TWNS\T12NR18E\ If you answer (1) KEYBOARD, GCONW grabs the current project as the GCONW project (reads temp.job). (2) FILE, will read in a list of projects from an ASCII file. EXAMPLE LIST: T03NR17E T03NR18E T03NR19E etc.
PROMPT	**EXPLANATION**
ENTER THE FILE NAME CONTAINING GMM PROJECTS **TPLIST**	NOTE: This prompt only occurs when FILE input is selected.
PICK A SELECTED UNIT WHEN TRANSFORMATION IS FROM NAD 27 TO NAD 83 (1) METERS (2) U.S. SURVEY FOOT (3) INTERNATIONAL FOOT	Select desired NAD 83 units to convert to during conversion from NAD 27. Units are ALWAYS converted to feet for NAD 27.

EXISTING PROJECT NAME IS XXXXXX
DO YOU WANT TO
(1) CHANGE DATUM OF EXISTING
        PROJECT
(2) CHANGE PROJECT AND THEN CHANGE
        ITS DATUM
(3) QUIT
	Complete the conversion you started, convert another project, or quit.
	
	NOTE:
	This prompt only occurs when keyboard input is selected.

ENTER A NEW PROJECT NAME (PRESS ENTER IF FINISHED)	Another chance to convert another project or quit. NOTE: This prompt only occurs when keyboard input is selected.

GCONW SCREEN - KEYBOARD INPUT

COMPUTER PROGRAM GCON WinGMM VER. 3.00 08-17-01
THIS PROGRAM TRANSFORMS GMM JOBS BETWEEN NAD 27 AND NAD 83
AND VICE VERSA. IT USES .DEF TO DETERMINE WHICH DIRECTION TO TRANSFORM.
ONE NEEDS TO DEFINE THE DESIRED NAD 83 UNITS ARE PROJECTS READ FROM.

ARE PROJECTS READ FROM
(1) KEYBOARD OR
(2) FILE
PICK A # <**1**>

PICK A SELECTED UNIT WHEN TRANSFORMATION IS FROM
NAD 27 TO NAD 83
(1) METERS
(2) U.S. SURVEY FOOT
(3) INTERNATIONAL FOOT
PICK A # <2>

EXISTING PROJECT NAME IS T03NR17E
DO YOU WANT TO
(1) CHANGE DATUM OF EXISTING PROJECT
(2) CHANGE PROJECT AND THEN CHANGE ITS DATUM
(3) QUIT
ENTER A # <1>

SUCCESSFUL UPDATING OF .CON FILE

TRANSFORMATION IS FROM NAD 27 TO NAD 83
READING IID AND CONVERTING TO TRANSFORMED GEODETIC COOR
SUCCESSFUL UPDATE OF LSA, COR, GEO, PGC, AND CTL ETC.
ENTER A NEW PROJECT NAME (PRESS ENTER IF FINISHED)

GCONW

QUITTING DATUM TRANSFORMATION - NOW YOU CAN GO HAVE A BEER

GCONW SCREEN - FILE INPUT
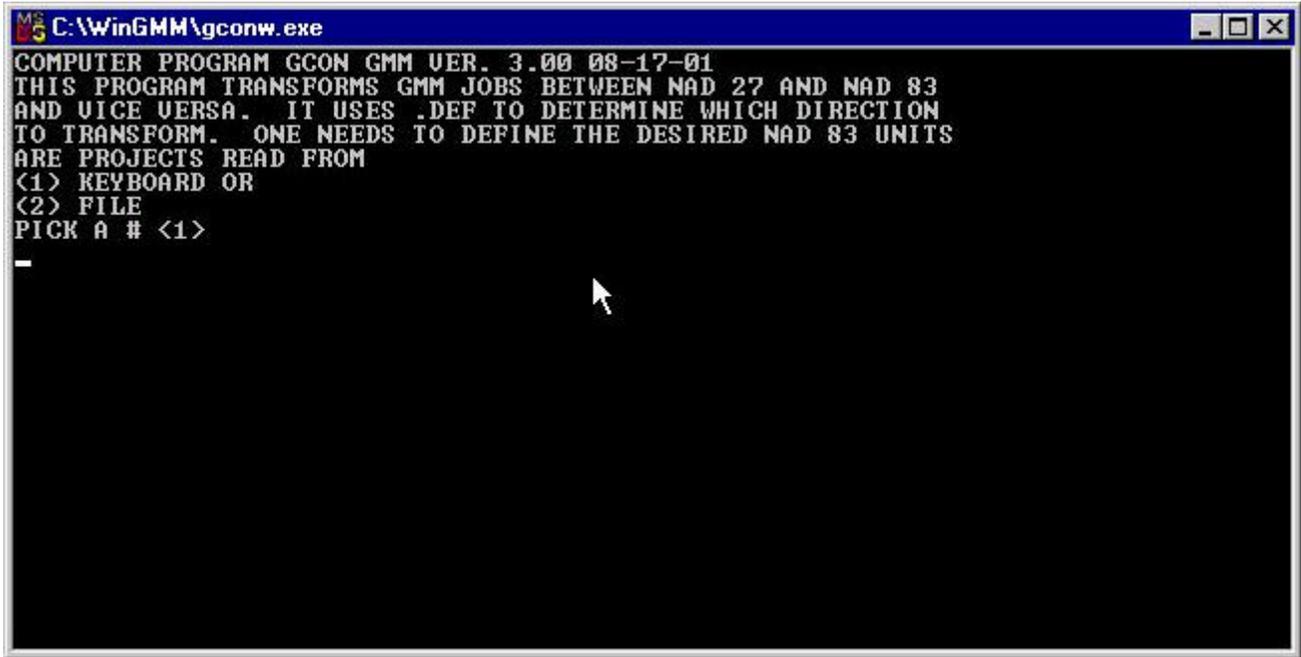
```
C:\WinGMM\gconw.exe                                            _ □ ✕
COMPUTER PROGRAM GCON GMM VER. 3.00 08-17-01
THIS PROGRAM TRANSFORMS GMM JOBS BETWEEN NAD 27 AND NAD 83
AND VICE VERSA.  IT USES .DEF TO DETERMINE WHICH DIRECTION
TO TRANSFORM.  ONE NEEDS TO DEFINE THE DESIRED NAD 83 UNITS
ARE PROJECTS READ FROM
<1> KEYBOARD OR
<2> FILE
PICK A # <1>
_
```

COMPUTER PROGRAM GCON WinGMM VER. 3.00 08-17-01

ARE PROJECTS READ FROM
(1) KEYBOARD OR
(2) FILE
PICK A # <1>
2
ENTER THE FILE NAME CONTAINING WinGMM PROJECTS
TPS.LST
PICK A SELECTED UNIT WHEN TRANSFORMATION IS FROM
NAD 27 TO NAD 83
(1) METERS
(2) U.S. SURVEY FOOT
(3) INTERNATIONAL FOOT
PICK A # <2>

READ FROM FILE PROJECT NAME
T03NR17E

SUCCESSFUL UPDATING OF .CON FILE

TRANSFORMATION IS FROM NAD 83 TO NAD 27
UTM COORDINATES WILL BE IN ZONE 11
LONGITUDE OF CENTRAL MERIDIAN IS 117. DEGREES W.
CONVERTING .LX

READ FROM FILE PROJECT NAME
T03NR18E

GCONW

SUCCESSFUL UPDATING OF .CON FILE

TRANSFORMATION IS FROM NAD 27 TO NAD 83
READING IID AND CONVERTING TO TRANSFORMED GEODETIC COOR
SUCCESSFUL UPDATE OF LSA, COR, GEO, PGC, AND CTL ETC.
ENTER A NEW PROJECT NAME (PRESS ENTER IF FINISHED)

 QUITTING DATUM TRANSFORMATION - NOW YOU CAN GO HAVE A BEER

GCONW

GCONHPW

To run GCONHPW: From the WinGMM main window menu, select "Command/Datum Transformation
NAD83<>HPGN (GCONHPW)"
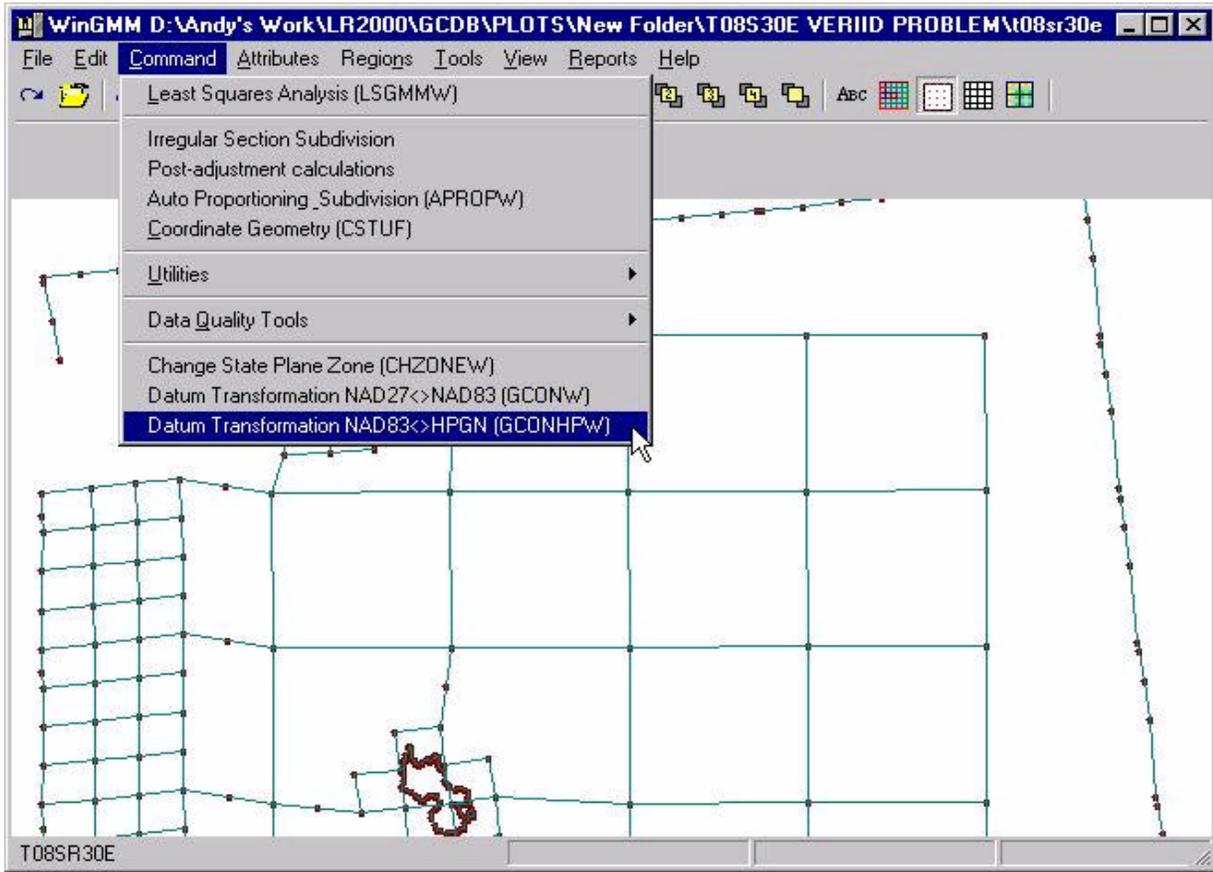
Purpose of GCONHPW: **GCONHPW** is used to convert WinGMM files from NAD 83 to HARN or HARN to NAD 83.

Required files: .COR   All files created from GCONW
                            .DEF
                            .CON
                            .GEO
                            .LSA
                            .SD
                            .SID
                            .PGC
                            .AN
                            .IID
                            .LX
                             (state or region).LAS   NGS file
                             (State or region).LOS   NGS file
                            NAD27.CON   NGS file
                            NAD83.CON   NGS file

Output files: The existing GCONW produced files are updated based on the new datum.

What happens: When GCONHPW is invoked, the coordinates in the existing GCONW produced files are converted either from NAD 83 to HARN, or from HARN to NAD 83. When converting from NAD 27 to HARN, GCONW must be run first, then GCONHPW. The .CON file will get HARN coordinates, which are labeled as such, as well as NAD27 and NAD 83 coordinates produced with GCONW.

In one run you can only go from NAD 83 to HARN or vice versa. You cannot go both ways like you can in GCONW.

In order to convert WinGMM data to HARN, GCONHPW requires specific state or region HARN .LAS and .LOS files. These files can be downloaded from the NGS web site or the Cadastral Bulletin Board. While running GCONHPW these files have to be defined (see first PROMPT below). They are then saved in a file HARN.INF till you elect to use a different one.

Note: The existing project files are wiped out as the transferred data replaces it.

GCONHPW

PROMPT	EXPLANATION
HARN CONVERSION DATA READ FROM FILE XXXXXX WITH .LAS AND .LOS EXTENSIONS IF CORRECT PRESS ENTER ELSE ENTER NEW FILE NAME (PATH IF NECESSARY, NO EXTENSION)	This is where you enter in the state or region HARN .LAS and .LOS files. Note: do not type in the file extension.

PROMPT	EXPLANATION
ARE PROJECTS READ FROM (1) KEYBOARD OR (2) FILE	The user must choose between keyboard input or input from an ASCII list of townships. Both types of input allow use of a path for each project, i.e. C:\GMMDATA\TWNS\T12NR18E\ If you answer (1) KEYBOARD, **GCONHPW** grabs the current project as the **GCONHPW** project (reads temp.job). (2) FILE, will read in a list of projects from an ASCII file. EXAMPLE LIST: T03NR17E T03NR18E T03NR19E etc.
ENTER THE FILE NAME CONTAINING WinGMM PROJECTS **TPLIST**	NOTE: This prompt only occurs when FILE input is selected.
IS TRANSFORMATION FROM (1) NAD83 TO HPGN OR (2) HPGN TO NAD 83	Choose which direction the conversion is going.

EXISTING PROJECT NAME IS XXXXXX
DO YOU WANT TO
(1) CHANGE DATUM OF EXISTING
        PROJECT
(2) CHANGE PROJECT AND THEN CHANGE
        ITS DATUM
(3) QUIT
	Complete the conversion you started, convert another project, or quit
	
	NOTE:
	This prompt only occurs when keyboard input is selected.

ENTER A NEW PROJECT NAME (PRESS ENTER IF FINISHED)	Another chance to convert another project or quit. NOTE: This prompt only occurs when keyboard input is selected.

GCONHPW SCREEN - KEYBOARD INPUT

COMPUTER PROGRAM **GCONHPW** GMM VER. 3.00 05-23-01
THIS PROGRAM TRANSFORMS GMM JOBS BETWEEN NAD 83 AND HPGN
AND VICE VERSA. IN ONE RUN PROJECTS CAN ONLY CONVERT IN ONE DIRECTION
AND IT IS ASSUMED YOU HAVE THE DIRECTION CORRECT.
NO UNITS ARE CONVERTED.

HARN CONVERSION DATA READ FROM FILE
CAHPGN
WITH .LAS AND .LOS EXTENSIONS

IF CORRECT PRESS ENTER
ELSE ENTER NEW FILE NAME (PATH IF NECESSARY, NO EXTENSION)

COMPUTER PROGRAM GMMCON VER. 3.00.00 11-19-97
BETA BETA BETA BETA BETA BETA BETA - USE WITH CAUTION

ARE PROJECTS READ FROM
(1) KEYBOARD OR
(2) FILE
PICK A # <1>
1
IS TRANSFORMATION FROM
(1) NAD83 TO HPGN OR
(2) HPGN TO NAD 83
PICK A # <1>
2
EXISTING PROJECT NAME IS T03NR17E
DO YOU WANT TO
(1) CHANGE DATUM OF EXISTING PROJECT
(2) CHANGE PROJECT AND THEN CHANGE ITS DATUM
(3) QUIT

GCONHPW

ENTER A # <1>

SUCCESSFUL UPDATING OF .CON FILE

TRANSFORMATION IS FROM HPGN TO NAD 83
UTM COORDINATES WILL BE IN ZONE 10
LONGITUDE OF CENTRAL MERIDIAN IS 123. DEGREES W.
CONVERTING .LX

SUCCESSFUL UPDATE OF LSA, COR, GEO, PGC, AND CTL ETC.
ENTER A NEW PROJECT NAME (PRESS ENTER IF FINISHED)

 QUITTING DATUM TRANSFORMATION - NOW YOU CAN GO HAVE A BEER

GCONHPW

GCONHPW SCREEN - FILE INPUT

COMPUTER PROGRAM **GCONHPW** GMM VER. 3.00 05-23-01
THIS PROGRAM TRANSFORMS WinGMM JOBS BETWEEN NAD 83 AND HPGN
AND VICE VERSA. IN ONE RUN PROJECTS CAN ONLY CONVERT IN ONE DIRECTION
AND IT IS ASSUMED YOU HAVE THE DIRECTION CORRECT.
NO UNITS ARE CONVERTED.

HARN CONVERSION DATA READ FROM FILE
CAHPGN
WITH .LAS AND .LOS EXTENSIONS

IF CORRECT PRESS ENTER
ELSE ENTER NEW FILE NAME (PATH IF NECESSARY, NO EXTENSION)

COMPUTER PROGRAM GMMCON VER. 3.00.00 11-19-97
BETA BETA BETA BETA BETA BETA BETA - USE WITH CAUTION

ARE PROJECTS READ FROM
(1) KEYBOARD OR
(2) FILE
PICK A # <1>
2
ENTER THE FILE NAME CONTAINING GMM PROJECTS
TPS.LST
IS TRANSFORMATION FROM
(1) NAD83 TO HPGN OR
(2) HPGN TO NAD 83
PICK A # <1>

READ FROM PROJECT NAME
T03NR17E
SUCCESSFUL UPDATING OF .CON FILE

GCONHPW

TRANSFORMATION IS FROM HPGN TO NAD 83
UTM COORDINATES WILL BE IN ZONE 10
LONGITUDE OF CENTRAL MERIDIAN IS 123. DEGREES W.
CONVERTING .LX

READ FROM PROJECT NAME
T03NR18E
SUCCESSFUL UPDATING OF .CON FILE

TRANSFORMATION IS FROM HPGN TO NAD 83
UTM COORDINATES WILL BE IN ZONE 10
LONGITUDE OF CENTRAL MERIDIAN IS 123. DEGREES W.
CONVERTING .LX

SUCCESSFUL UPDATE OF LSA, COR, GEO, PGC, AND CTL ETC.
 QUITTING DATUM TRANSFORMATION - NOW YOU CAN GO HAVE A BEER

GCONHPW

PCCS CONVERSIONS: TOLXNW, GETLXW, NODUP

     TOLXNW

To run TOLXNW: From the WinGMM main window menu, select "Command/Utilities/ convert LX to
    LXN (TOLXNW)"
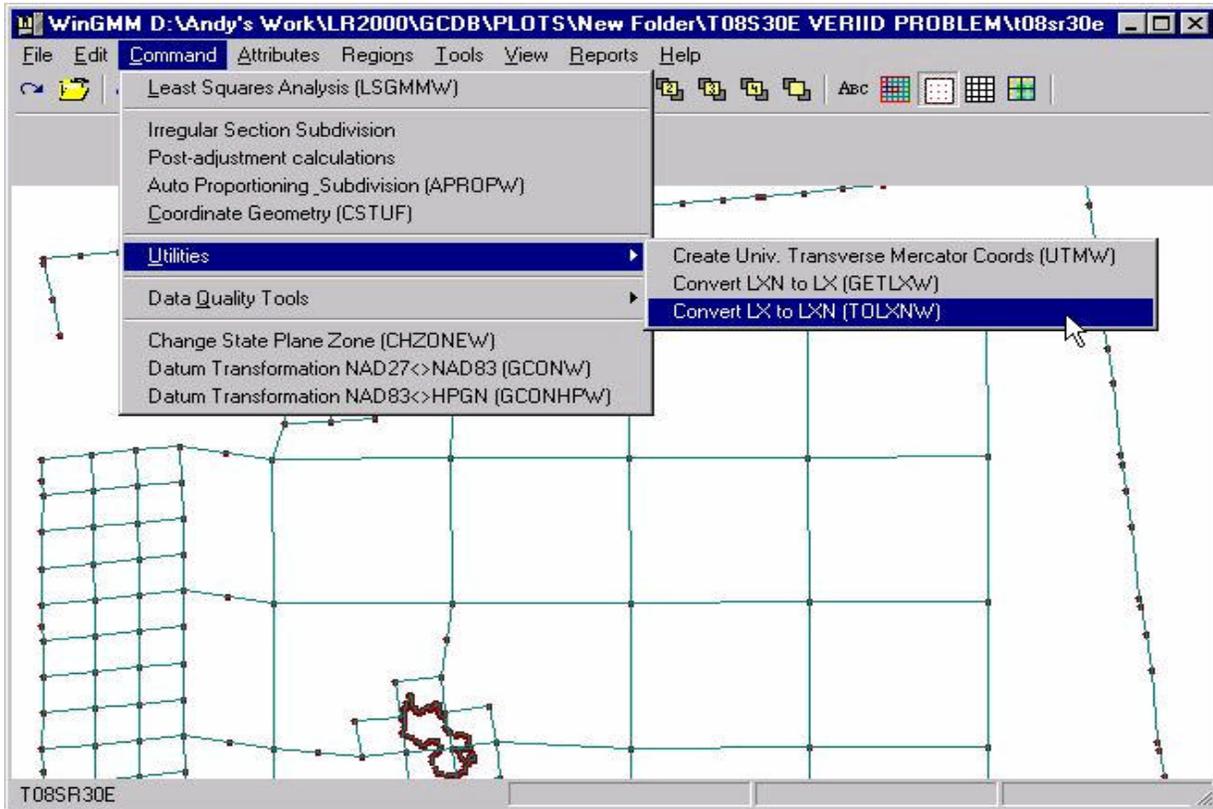
Purpose of TOLXNW: TOLXNW is used to convert the PCCS "L" file into the WinGMM lines file. The .LX
                    file is about 12 times larger than the .LXN.

Required files: .LX
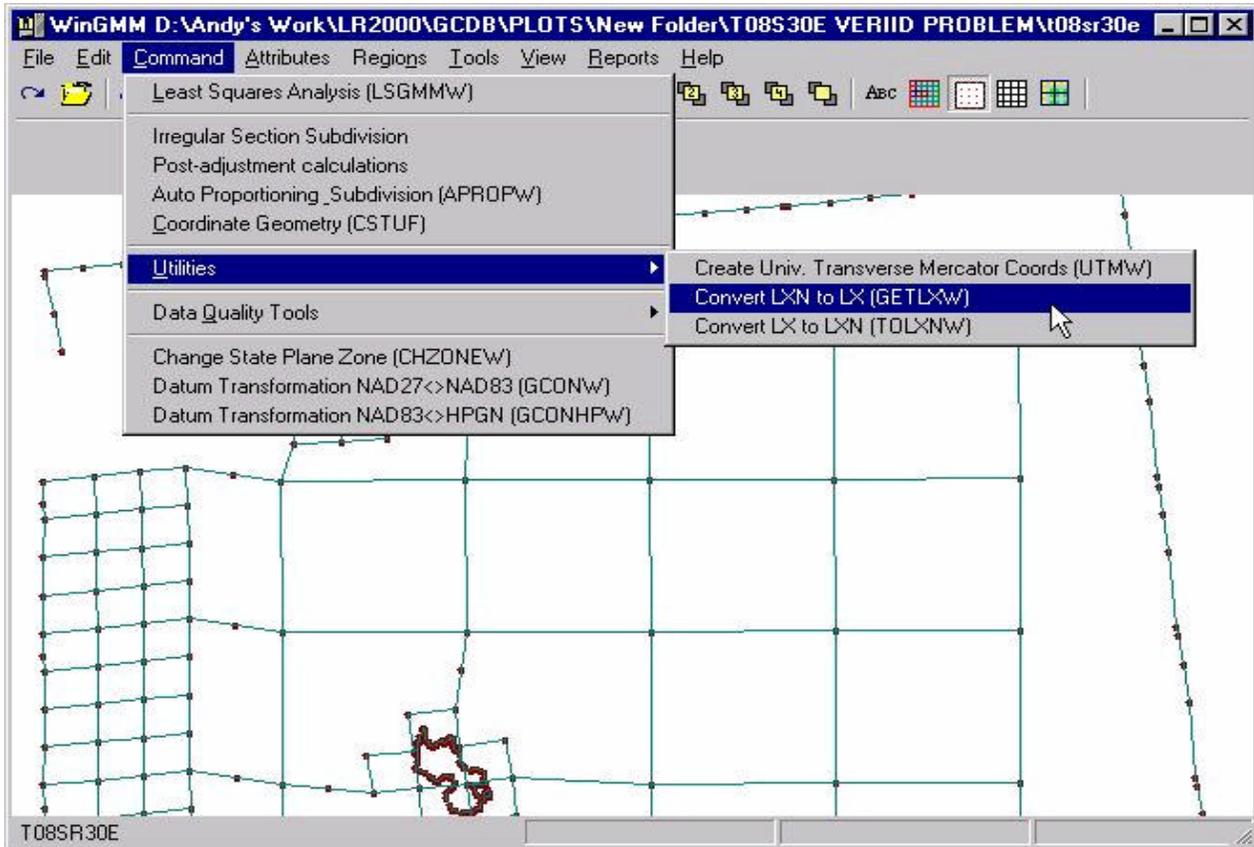
Output files: .LXN

What happens: When TOLXNW is invoked, it writes an .LXN file from data extracted from the .LX
                    file.

User response: TOLXNW has no prompting.

PCCS CONVERSIONS   TOLXNW

GETLXW

To run GETLXW: From the WinGMM main window menu, select "Command/Utilities/Convert LXN to (GETLXW)"

Purpose of GETLXW:	GETLXW is used to convert the WinGMM .LXN lines file into the PCCS "L" file format.
Required files	.LXN .PGC
Output files:	.LX
What happens:	When GETLXW is invoked, it writes an .LX file from data combined from the .LXN file and .PGC file.
User response:	GETLXW has no prompting.

NODUP

To run NODUP: From the WinGMM main window menu, select "File/Import/ PCCS dataset (NODUP)"
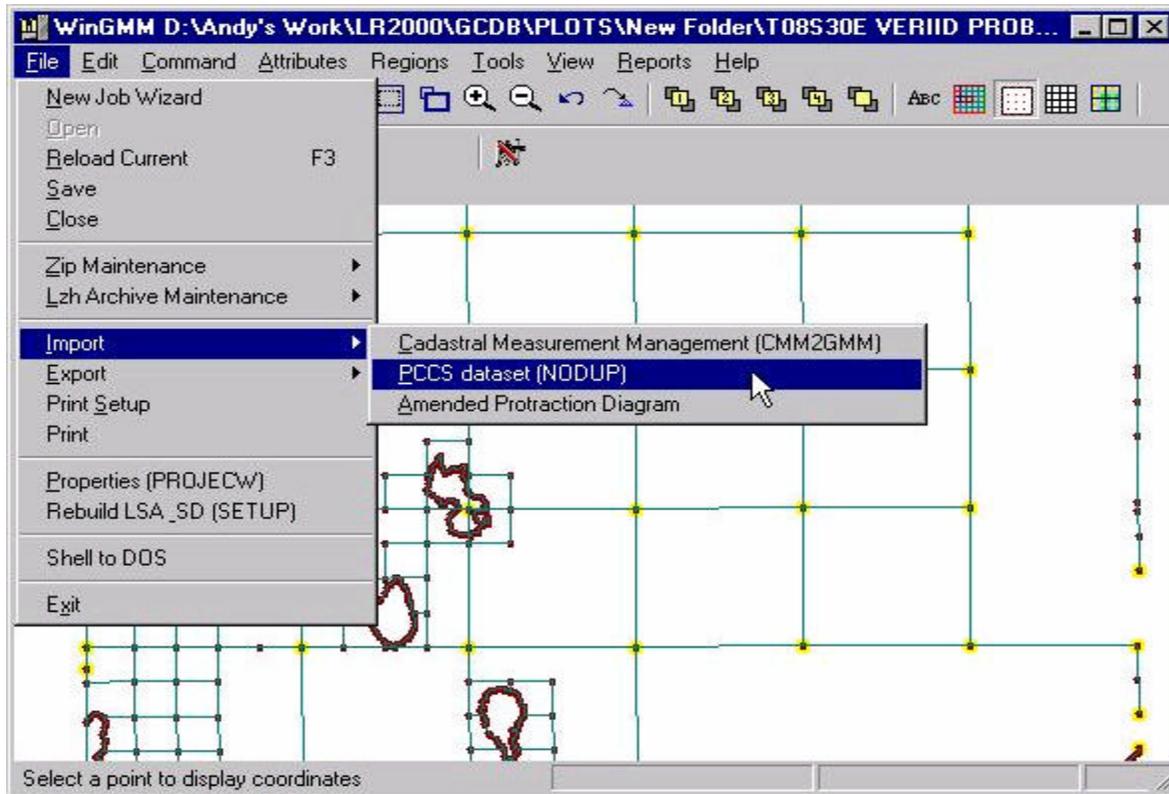
Purpose of NODUP: Used to convert an existing PCCS data set to an equivalent GMM data set.

Required files.   Projectname.lok
                         Ctownship   Source directory PCCS file
                         Rtownship   Source directory PCCS file
                         Xtownship   Source directory PCCS file
                         LXtownship Source directory PCCS file

Optional files: date.err   Text editor file
                         Ztownship   Source directory PCCS file

Output files: Projectname.dup
                         .def, .con, .lsa, .sd, .raw, .sid, .pgc, .cor, .add, .int, and .lxnn in the target directory.

What happens: NODUP compares coordinates in the PCCS-format .PGC file to locate coordinates that have more than one ID. It then writes a new .RAW file with a distinct set of IDS.

User response: NODUP has no prompting other than when mismatches are found between .raw file and adjacent boundaries. The user will need to click "Enter" for the program to continue.

It is important to note that the Nodup executable requires some up front preparation before invoking.

First, create a new job using the new job wizard (see section 2). Use any projectname other than a township name.

Next, use a text editor to create a projectname.lok. The .lok file contains the source path of the PCCS files and the target path for the converted GMM files for each township on a single; this file is not column specific (no tabs). The PCCS Rtownship file must be the listed filename and only the township name is required in the target directory. An example .lok follows:

> C:\PCCS\R11S14E   C:\GMM\T11S14E
> C:\PCCS\R10S35E   C:\GMM\T10S35E

The source directory should contain the following PCCS files for each township: Ctownship, Xtownship, Lxtownship, Ztownship. There are no limits to the number of townships listed in the .lok file.

The program will populate the .sid file with default estimates that initially populates .def creation. Some states have created a Ztownship file for their PCCS data sets. This file contains metadata about each survey, and can assist with populating the .sid file.

In order for Nodup to apply correct error estimates to the SID, a date.err file must be created with a text editor. This file will contain the range of years for each set of error estimates listed. For each line of the file the following must be entered in this order;   begin year,
> end year,
> dist. error constant (ft),
> dist ppm error,
> bearing error (decimal zed hours).

This file is also not column specific, but spacing is required between entries on a line, an example follows:
> 1750 1850 1 5000 1
> 1851 1930 0.5 3000 0.30
> 1931 1950 0.2 3000 0.20
> 1951 1960 0.15 2000 0.10
> 1961 1979 0.1 1000 0.02
> 1979 2009 0.05 800 0.01

The following are the files output to the target directory:
.def, .con, .lsa, .sd, .raw, .sid, .pgc, .cor, .add, .int, and .lxn files.

Finally, this program outputs a report file, **projectname.dup**, which identifies segments of the raw file that do not match with adjacent boundaries, point renames, and found auto-intersections. To receive boundary mismatch information the adjacent boundaries must be present in the source directory and PCCS data sets.